ILLUSTRATIONS

OF

TYPICAL SPECIMENS

OF

LEPIDOPTERA HETEROCERA

IN

THE COLLECTION

OF

THE BRITISH MUSEUM.

PART IV.—NORTH-AMERICAN TORTRICIDÆ.

BY LORD WALSINGHAM.

Smithsonian Institution
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U. S. National Museum

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ALERE FLAMMAM.

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PREFACE.

THE present part of the "Illustrations of Typical Specimens of Lepidoptera Heterocera in the British Museum" deals exclusively with the *Tortricidæ* of North America in the National Collection. Many species originally named by the late Mr. Walker are now fully described and figured. But our knowledge of this group has received, besides, an important addition by numerous new species discovered and collected by Lord Walsingham in 1871 and 1872, chiefly in California and Oregon. These are now for the first time described, the types having been presented by him to the Museum.

ALBERT GÜNTHER,
Keeper of the Department of Zoology.

British Museum, November 29, 1879.

INTRODUCTION.

In describing several new species of *Tortricidæ* from North America, and re-describing such of Mr. Walker's species as had not been anticipated by other authors, and of which the types are now in the British Museum, I have thought it advisable to adopt as far as possible the system of classification laid down by Heinemann in his 'Schmetterlinge Deutschlands und der Schweiz,' published in 1865.

Many systems of generic subdivision have been suggested for this difficult group; but all appear to have been founded upon a study of European species only. So far as I have been able to judge, none of these various systems are sufficiently perfect and natural to facilitate the arrangement of a cosmopolitan collection. It is very desirable that some comprehensive system should be devised; but for this purpose a very careful study of specimens from all parts of the world is obviously necessary, and it may be long before such a work can be successfully undertaken. Until this has been done, any arrangement of this group of insects must, I think, be considered, in part at least, provisional.

In the meanwhile Heinemann's system, although not infallible when applied to large numbers of species with which he was necessarily unacquainted, seems to afford a wider and sounder basis for generic classification than those of other authors. He attaches much value to differences of neuration; and although

perhaps (in opposition to the views urged by the late Mons. Peyerimhoff in the 'Annales de la Société Entomologique de France,' 1876, p. 577) he depends too much upon the presence or absence of the costal fold for generic division, his critics have not yet produced any system of classification which can be said to supersede that of Heinemann, or to depart from the general guiding principles which he laid down. Many genera which have been perhaps linked together by the discovery of intermediate forms, or which have not presented in themselves sufficiently strong permanent characteristic differences, besides some few, perhaps, which might possibly have remained clearly defined and acknowledged, seem to have been merged by him under more comprehensive generic titles, in which they have sunk to the rank of subgenera. It may be objected to this system that distinctions sufficient to separate the numerous subgenera are really equally sufficient to be of full generic value.

Whilst following the method of determination laid down by Heinemann, I have ventured so far to depart from his system of arrangement for the purposes of this volume as to recognize his subgenera as genera, thus avoiding that departure from strict binominal nomenclature which is involved in the practice of writing names in such a form as "*Tortrix* (*Cacœcia*) *rosaceana*, Harris;" and had I been following it less faithfully I should have been much disposed to break up the large genus *Pædisca* into at least three separate divisions, which could, I think, be clearly defined.

Heinemann uses *Grapholitha*, H.-S., as one of the subgenera of *Grapholitha*, Tr. Since Heinemann's limitation of the subgenus is not exactly coextensive with Herrich-Schäffer's limitation of the genus, I have preferred to speak of *Grapholitha* (H.-S.), Hein., as expressing that Heinemann's subgenus is adopted as distinguished from the larger and more comprehensive genus of Treitsche.

An additional reason for adopting Heinemann's method seems to be presented by the fact that Prof. C. H. Fernald, of Maine State College (who is, I believe, about to publish a complete list of the North-American *Tortricidæ*), has been guided in his investigations by the rules laid down by Heinemann; and as the present volume treats exclusively of North-American species, it will be found convenient that their classification corresponds, as far as possible, with that which has been adopted in compiling such a national catalogue.

I must express my grateful acknowledgments to those gentlemen who have assisted me in acquiring the necessary information for this volume—to H. T. Stainton, Esq., to Mr. C. G. Barrett, and others in this country, to Prof. P. C. Zeller, of Stettin, and especially to Prof. Fernald, of Maine State College, and to Mr. Cresson and others of the Entomological Society of Philadelphia, for enabling me to become acquainted with many of the species described by American, as well as European, authors whose types I have had no opportunity of examining.

I hope that all adequate precaution has been taken against mere additions to synonymy, which in this group of insects is already so extensive; but I can scarcely expect to have entirely avoided the error of redescription in a family of Lepidoptera peculiarly difficult to render recognizable even by coloured figures, and equally difficult to recognize from mere descriptions. Many Californian species approach very closely to well-known European forms, but seem to have some constant, although slight, distinguishing peculiarities. I have not knowingly ventured to describe any such as new, except where I have been able carefully to compare a considerable series of specimens, as in the case of *Penthina vetulana*, *Penthina consanguinana*, *Pœdisca hirsutana*, *Pœdisca illotana*, *Rhyacionia juncticiliana*, and others. I have in all cases stated the number of specimens now in the British Museum collection only, without reference to those available for comparison in my own collection.

To facilitate the study of the North-American *Tortricidœ* represented in the collection of the British Museum, I have given after each genus a list of such of Mr. Walker's species as were placed in that genus by him, but which, for various reasons, have not now retained this position in the catalogue of types.

In these lists reference is made to such synonyms only as are entitled to take precedence of the names given by Mr. Walker. For these I am indebted partly to Messrs. Grote and Robinson (Trans. Amer. Ent. Soc. 1868, ii. pp. 83, 84), partly to information received from Prof. Fernald, whose observations on Walker's types will probably appear before this volume is printed, and partly to my own observation and comparison of Walker's specimens, by which means I have in all cases carefully verified the synonymy.

I have ventured to add a list of all the European species which up to the present time have been observed in North America, together with such as I

have myself met with or recognized, and which have not before been recorded as occurring in that country.

Mr. Edwin Wilson has exercised great care and patience in faithfully rendering the form and markings of the various specimens. In the case of some of Mr. Walker's types, which are in extremely poor condition, this has been a difficult task; but the measure of success with which it has been accomplished will, I trust, be the means of preserving a reliable record of this portion of Mr. Walker's work.

WALSINGHAM.

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ILLUSTRATIONS

OF

TYPE SPECIMENS

OF

LEPIDOPTERA HETEROCERA.

TORTRICIDÆ.

TERAS, *Tr.*

Teras subnivana. (Plate LXI. fig. 2.)

Penthina subnivana, *Walk. Cat. Lep. Het.* xxviii. pp. 376, 377.
Teras deflectana, *Rob. Trans. Am. Ent. Soc.* ii. p. 283, pl. vii. fig. 71; *Zeller, Verh. z.-b. Ges. Wien,* xxv. p. 211.

Palpi white above, reddish brown beneath, projecting scarcely the length of the head beyond it; the short apical joint obtuse, exposed: head and thorax white. Fore wings—with the costa considerably arched towards the base, emarginate beyond the middle, the apex not produced—white, with a few tufts of raised white scales before the middle and some few pale ferruginous spots and streaklets beyond the middle; a conspicuous triangular ferruginous costal patch, in which the white ground-colour is more or less visible on its upper edge internally, contains some minute dots of raised black scales; the apical margin and anal angle are clouded and spotted with pale ferruginous; and there are one or two minute streaks or spots of the same colour near the base of the costa: cilia dusky grey, tinged with ferruginous. Hind wings cinereous grey, with a slender pale ochreous line at the base of the cilia. Type ♂. Expanse of wings 16 millims.

Nova Scotia. From Lieut. Redman's collection. Robinson gives Pennsylvania as its locality.

Zeller (Verh. z.-b. Ges. Wien, xxv. p. 211) points out that *Teras deflectana,* Rob., is nearly allied to the European *Teras boscana.* The same differences which he notices are to be

found in Walker's type of *subnivana*, especially the brown (not black) colouring of the costal patch, and the grey (not pure white) cilia of the fore wings, as well as its smaller size. I took a specimen at Washington in May 1871; and I have seen another specimen from North America, both of which approach the European form more closely in these particulars. It may eventually be found that the true *boscana* also occurs there.

Teras nivisellana. (Plate LXI. fig. 3.)

Head, palpi, and antennæ dark ferruginous brown; thorax white. Fore wings white, with numerous tufts of raised scales; a triangular brownish patch rather beyond the middle of the costa, containing towards its apical angle a bluish-purple shade, internally margined with black; an ochreous shade runs through the costal patch and is diffused over the wing towards the anal angle, containing one or more spots of raised scales of the same colour and extending towards some rich ferruginous-brown streaks near the apical margin and apex; there is a conspicuous tuft of raised ferruginous-brown scales near the basal third of the dorsal margin, with a small black dot on the fold immediately above it: underside pale reddish brown, the costa touched with white: cilia reddish brown. Hind wings pale reddish fuscous. 2 ♀. Expanse of wings 16 millims.

Mount Shasta, California, August 1871, at an elevation of about 5000 feet. The species was also met with in May of the following year near Rouge River, in Oregon.

This is evidently the North-American representative of the common European *T. variegana*, Schiff.; but it differs from all varieties I have seen of that insect in the costal triangular spot being distinctly divided from the apical shade, as well as in the form of the apical shade itself, which in the species above described occupies a wider space on the dorsal than on the costal margin. I should hesitate to consider it a mere variety unless some intermediate forms should yet be found.

Teras simpliciana. (Plate LXI. fig. 4.)

Antennæ fuscous; head, palpi, and thorax white. Fore wings white with a slight yellowish tinge, with some streaks of dusky scales towards the apex: a purplish-black subobtuse triangular patch at the costa slightly beyond the middle, reaching over the upper edge of the cell; in this patch are a few slightly raised darker scales: a minute black spot lies in the basal third of the wing below the fold, and sometimes another smaller one on the cell above it, rather nearer the base. Hind wings tinged with brownish grey; cilia paler. 2 ♀. Expanse of wings 14 millims.

Camp Watson, on John Day's River, Oregon, March 1872.

Allied to *Peronea gallicolana*, Clem. Proc. Ent. Soc. Phil. iii. p. 516, which is figured by Robinson, Proc. Am. Ent. Soc. ii. pl. vii. fig. 72, but much smaller and paler, not having the strong brownish-grey colour peculiar to that species.

Teras foliana. (Plate LXI. figs. 5 & 6.)

Head and palpi ochreous, the latter projecting not more than the length of the head beyond it, second joint thickly clothed with ochreous scales which partly conceal the short apical joint; antennæ brownish ochreous, slightly pubescent in the male; thorax brownish ochreous in front, pale straw-colour behind, where there is a raised tuft of scales of the same colour. Forc wings—with the costa arched; apex produced, almost falcate; dorsal margin nearly straight—pale straw-colour, more or less suffused or reticulated with ochreous brown; a very pale yellowish triangle is preceded by a pale oblique chestnut-brown shade from the middle of the costa, which in some specimens is carried round more faintly on its outer edge; a narrow pale chestnut-brown line runs along the apical margin; and in some specimens (as in fig. 6) the whole surface of the wings is strongly reticulated with the same colour: cilia at the anal angle straw-coloured, along the apical margin paler: underside glossy pale reddish straw-colour, the costal triangle sometimes indicated in pale staw-colour. Hind wings pale straw-colour, with a faint rosy tinge; cilia and legs lighter. Expanse of wings 19–21 millims.

Southern extremity of Lower Lake, Lake County, California, June 23rd, 1871.

This species is nearly allied to *Teras contaminana,* No. 683 of Staudinger and Wocke's Catalogue, placed by Wilkinson in the genus *Dictyopteryx* of Stephens, which genus is apparently merged in *Teras,* Tr., by Heinemann.

The types figured are both males. There are six males and one female in the Museum collection.

Teras pulverosana. (Plate LXI. fig. 7.)

Teras pulverosana, *Walk. Cat. Lep. Het.* xxviii. p. 291.
Sciaphila implexana, *Walk. Cat. Lep. Het.* xxviii. p. 338.

Palpi projecting about the length of the head beyond it, thickened in the middle; the apical joint short, depressed. Fore wings—with the costa rather abruptly arched near the base, straighter beyond; the apical margin oblique, slightly impressed below the apex—purplish cinereous, slightly irrorated with fuscous; paler beneath, with two oblique angulated lines of slightly raised fuscous scales, the first before the middle forming the inner edge of an indistinct purplish-fuscous fascia; the second beyond the middle reaching the apical margin above the anal angle and enclosing the apical portion of the wing, which is indistinctly streaked and mottled with purplish fuscous. Hind wings paler, with a faint purplish tinge, indistinctly speckled transversely towards the costal margin. Type ♀. Expanse of wings 19 millims.

St. Martin's Falls, Albany River. Presented by Dr. Barnston.

I have thought it desirable to figure this specimen, which, although nearly allied to the common *Teras hastiana,* Linn., and not in good condition, is probably the type of a smaller and distinct species, having perhaps also a wide range of variation. It is apparently darker than any of the specimens figured by Robinson in plate vii. of the 'Transactions of the

American Entomological Society;' but I have specimens from California which nearly approach it. Some of these are now in the Museum collection.

The other supposed North-American specimens placed by Walker in the genus *Teras* are as follows:—

Teras rostrana, Walk.: see *Platynota rostrana*, p. 5.
—— *vicariana*, Walk., = *Lozotænia rosaceana*, Harris.
—— *albaniana*, Walk.: see *Pandemis albaniana*, p. 11.
—— *obsoletana*, Walk.: see *Lozotænia obsoletana*, p. 11.
—— *retractana*, Walk.: the type of this species is labelled "Australia."
—— *subauratana*, Walk., = "*Crœsia?*" *reticulatana*, Clem.
—— *tinctana*, Walk., = *Platynota flavedana*, Clem.
—— *xanthoides*, Walk.: see *Cenopis? xanthoides*, p. 20.
—— *hudsoniana*, Walk., = *Teras hastiana*, Linn.?
—— *directana*, Walk.: see *Cenopis directana*, p. 17.
—— *caliginosana*, Walk., = *Teras hastiana*, Linn.

HENDECASTEMA*.

Caput vestitum. Palpi capite bis longiores utrinque a medio fastigati. Antennæ ♂ utrinque pectinatæ. Alæ anticæ latitudine plus quam bis longiores; costâ præcipue apud basin arcuatâ, apice vix producto: ♂ venis undecim singulis, venâ septimâ apud costam ante apicem finitâ; ♀ venâ septimâ furcatâ, apice furcam interjacente.

Head thickly clothed above and in front. Palpi twice as long as the head, thickened in the middle, the apical joint slightly depressed, tapering. Antennæ pectinated on both sides in the male. Fore wings more than twice as long as wide, without a costal fold; costa arched abruptly at the base; apex scarcely produced; apical margin not oblique, slightly concave below the apex: veins of the fore wings in the male eleven, branch 7 ending in the costal margin. The female slightly larger than the male and almost without ornamentation; branch 7 of the fore wings forked before the apex, which lies between its two branches.

This genus is separated from *Lozotænia*, H.-S., *Heterognomon*, Ld., &c. by the pectinated antennæ and by the number of veins in the fore wings of the male; differing in this latter character, as well as in the form of the wings themselves, from *Amphisa*, Curt., *Dichelia*, Gn., &c., in which genera veins 7 and 8 arise from a common pedicle in both sexes.

Type *Hendecastema cuneanum.*

Hendecastema cuneanum. (Plate LXI. figs. 8–10.)

Head clothed with chestnut-brown scales above and in front: palpi chestnut-brown, the middle joint enlarged towards the end; the apical joint slightly depressed, tapering to a blunt point: antennæ dull straw-colour, strongly pectinated in the male on both sides: thorax and abdomen pale straw-colour, with a tuft of long hairs on each side behind the base

* ἕνδεκα, eleven; στῆμα, vein.

of the hind wings. Fore wings pale straw-colour; the costa arched somewhat abruptly at the base, where there is a strong chestnut-brown shade: a wedge-shaped spot of a similar colour points outwards from the costa before the middle towards the anal angle; a narrow chestnut-brown shade extends vertically downwards from the apex halfway along the apical margin, the wing thence being rounded off obliquely to the dorsal margin: cilia very pale straw-colour. Hind wings yellowish white, with a chestnut-brown shade at the apex. Legs pale straw-colour; the first pair of tarsi chestnut-brown above. The female slightly larger than the male; fore wings unicolorous ochreous chestnut, hind wings yellowish white: antennæ simple. 3 ♂, 1 ♀. Expanse of wings ♂ 30 millims., ♀ 33 millims.

Var. adumbranum.

In this var. ♂ the chestnut-coloured wedge-shaped mark on the costa is much occupied by dark fuscous scales, and it blends into a chestnut shade, which is continued along the costa to the apex, and downward through the wing to the dorsal margin beyond the middle, forming a sort of large irregular triangle, from the inner edge of which a slight projection extends towards the base of the wing along the fold. There is an oblique line of faint fuscous scales halfway between the costal wedge-shaped mark and the apex, reaching downwards towards the anal angle. The space between the thorax and the middle shade is of a more ochreous tint than the space beyond it above the anal angle, which is very pale straw-colour. The female has the fore wings darker than in the typical form, but nearly unicolorous; a paler oblique fascia, scarcely perceptible beyond the middle; the space above the anal angle also pale. 1 ♂, 1 ♀. Expanse of wings ♂ 30 millims., ♀ 33 millims.

Both varieties of this species occur in the month of August, on the western slopes of Mount Shasta, California, at an elevation of about 6000 feet, among thickets of "Manzanita," *Arctostaphylos glauca* (Lindl.), on which I have little doubt the larva feeds. In a considerable series I have met with no varieties intermediate between the two forms above described; but it would be at least premature to consider them distinct species.

PLATYNOTA, *Clem.*

Platynota rostrana. (Plate LXII. fig. 1.)

Teras rostrana, *Walk. Cat. Lep. Het.* xxviii. p. 290.
Teras restitutana, *Walk. Cat. Lep. Het.* xxviii. p. 292.
Teras connexana, *Walk. Cat. Lep. Het.* xxviii. p. 293.

Palpi very long, projecting fully three times the length of the head beyond it; the second joint nearly three times as long as the apical joint, slightly enlarged towards its base, tapering forward: antennæ simple. Fore wings—with the costa abruptly arched near the base, straight beyond, the apex not rounded; apical margin straight, not oblique—tawny fawn-colour, the whole surface streaked with very minute detached streaks of tawny-fuscous scales in broken

wavy lines, some slightly raised; with a slender raised tawny-fuscous line from about the middle of the costa, bulged outward, and running to the dorsal margin before the anal angle; another from the costa before the apex to the anal angle, nearly parallel to the apical margin, and a very slender similar line along the apical margin itself. Hind wings with a rufous tinge, very faintly mottled; cilia paler. Underside of fore wings reddish ochreous. Type ♀. Expanse of wings 20 millims.

With a specimen from San Domingo and another from Ega are two specimens labelled "United States, Doubleday." A marginal note in the British Museum register, by Mr. E. Doubleday, states that the collection presented by him was made by himself in the United States in 1837–1838, "with a few additions from other sources,"—I presume, North-American sources. In any case there seems to be no sufficient reason for doubting that two specimens of the species above described are from North America.

The species is most nearly allied to "*Tortrix*" *laterana*, Rob.; but whereas in Robinson's species the "central fascia is distinctly limited" and "filled in with blackish above and deep ferruginous below the middle," Walker's *rostrana* has the raised margins of the central fascia interrupted, and the interjacent space scarcely perceptibly darker than the ground-colour of the wing; moreover the general arrangement of the lines is not the same in both species, so far as I am able to judge from specimens in my own collection. Walker's descriptions of his three species—*rostrana, restitutana,* and *connexana*—will be found to be, almost word for word, the same, the only noticeable difference being in the palpi.

rostrana. "Third joint nearly half the length of the second."
restitutana. "Third joint not more than one third the length of the second."
connexana. "Third joint not more than one fourth the length of the second."

I have been unable to perceive these differences in his type specimens, which appear to belong without doubt to one and the same species.

CACŒCIA, *Hüb.*

Cacœcia patulana. (Plate LXI. fig. 1.)

Tortrix patulana, *Walk. Cat. Lep. Het.* xxviii. p. 325.

Palpi short, thickened in the middle, projecting nearly the length of the head beyond it; together with the head brownish ochreous: antennæ with the basal joint thickened, paler. Fore wings—with the costa rounded towards the base, deeply impressed beyond the middle; the apex produced, subfalcate; the apical margin concave below the apex—shining pale reddish straw-colour, thickly covered with minute detached transverse streaks of slightly raised black and chestnut-brown scales: three subobsolete, abbreviated, oblique chestnut-brown fasciæ are faintly indicated—the first very indistinct near the base; the second from the middle of the costa; and the third beyond it, followed by four minute very oblique black streaklets in the depressed portion of the costa: cilia at the apex chestnut-brown, below it paler. Hind wings very pale straw-colour, tinged with reddish towards the apical margin. Underside of

the fore wings reddish straw-colour, of the hind wings paler; both with scattered black streaklets along the costal margin. Type ♀. Expanse of wings 39 millims.

Oajaca, Mexico. From Mr. Sallé's collection.

This species, which seems to be a true *Cacœcia*, should properly have been figured on Plate LXII., among the other species of that genus.

Cacœcia semiferana. (Plate LXII. figs. 2 & 3.)

Lophoderus? semiferanus, *Walk. Cat. Lep. Het.* xxviii. p. 336.
Tortrix flaccidana, *Rob. Trans. Am. Ent. Soc.* pl. vi. fig. 53, p. 277.
Tortrix (Lozotænia) flaccidana, *Zell. Verh. z.-b. Ges. Wien*, xxv. p. 219.

Fore wings—fully twice as long as wide, with the costa arched at the base, concave beyond the middle, with a well-developed appressed costal fold in the male; apex produced; apical margin scarcely indented below the apex—reddish chestnut, with shining whitish ochreous spots and markings containing some silvery scales: an irregular whitish ochreous oblique fascia, angulated at its outer edge below the middle, forms the external margin of a rather mottled basal patch; beyond it, about the middle of the costa, is a triangular whitish ochreous spot, followed by two irregular spots of the same colour tending towards the anal angle, giving the appearance of an oblique fascia broken up into three parts, the middle part preceded by a spot of fuscous scales at the end of the cell: beyond the median costal spot are four smaller spots, also on the costa, the third from the apex being the most conspicuous: cilia pale whitish ochreous. Thorax and abdomen whitish ochreous. Hind wings pale reddish chestnut. The anal appendages large and hirsute. Type ♂. Expanse of wings 20 millims.

The locality of Walker's type is not known; but it agrees precisely with Robinson's figure, who gives Texas as the habitat of the species. I have several specimens from Texas in my own cabinet (some now added to the national collection), which, although exhibiting some variation from the original type, are probably correctly referred to this species.

The very decided costal fold in the male seems to separate this species from the genus *Lozotænia* according to Heinemann's limitation, to which reference is made in the remarks which follow the description of *Cacœcia argyrospila*.

I have thought it desirable to figure a variety of this species received from Canada, which approaches somewhat nearly to the Texan varieties mentioned above, but is perhaps even more deprived of the typical markings.

In this specimen, a male, the palpi (which are missing in the type) are slender, not profusely clothed, having the apical joint exposed; the antennæ strongly pubescent. The fore wings pale yellowish fawn-colour, shaded with brown towards the costa and with scattered fuscous scales towards the apical margin; four very pale yellowish-fawn spots on the costa, the first rather triangular scarcely beyond the middle, the last two towards the apex containing some silvery scales posteriorly; a spot of fuscous scales at the end of the cell is followed by a pale shining dash. The fasciæform arrangement of the pale markings in the type is completely lost in this variety. The dorsal margin is touched

with fuscous immediately before the anal angle; cilia shining ochreous grey. Hind wings pale brownish ochreous, with slightly paler cilia. Expanse of wings 20 millims.

Cacœcia transiturana. (Plate LXII. fig. 4.)

Cacoecia transiturana, *Walk. Cat. Lep. Het.* xxviii. p. 312.
Tortrix sanbornana, *Rob. Trans. Am. Ent. Soc.* ii. pl. i. fig. 8.

Palpi short, reddish ochreous, the apical joint obtuse. Head, antennæ, and fore wings reddish ochreous; the latter with minute transverse irregular reddish-brown streaks, the most conspicuous of these forming the inner margin of an oblique subobsolete central fascia, which contains some purplish-fuscous scales towards the costa and below the middle, and reaches the dorsal margin before the anal angle. Beyond the middle of the costa is a spot also containing a shade of purplish fuscous, and indicating a subobsolete abbreviated fascia pointing towards the apical margin above the anal angle; there is also a subobsolete outwardly oblique basal patch, indented above the middle. Hind wings pale greyish ochreous, darker towards the abdominal margin: cilia concolorous, but very shining. Type ♀. Expanse of the wings 26 millims.

North America. From Mr. Carter's collection.

Robinson gives Texas, Florida, Massachusetts, Pennsylvania, and New York as localities for the species.

Cacœcia argyrospila. (Plate LXII. figs. 5 & 6.)

Retinia argyrospila, *Walk. Cat. Lep. Het.* xxviii. p. 373.
Tortrix furvana, *Rob. Trans. Am. Ent. Soc.* ii. pl. i. fig. 9, p. 265.
Tortrix (Lozotænia) furvana, *Zell. Verh. z.-b. Ges. Wien*, xxv. p. 219.

Head and palpi brownish ochreous; thorax and antennæ deep brownish red. Fore wings —with the costa arched to the middle, flattened towards the apex; an appressed costal fold at the base in the male; the apical margin not indented, slightly oblique—deep brownish red, with several paler transverse streaks and mottlings, especially noticeable above the anal angle and before the middle of the dorsal margin; with three conspicuous shining yellowish-white costal spots—the first halfway between the middle and the base of the wing, elongate oblique, abruptly terminated on the upper edge of the cell; the second triangular (not oblique or fasciæform, as in some varieties of the same species from California), interrupted on the costa by one or two minute reddish-brown costal dots; the third near the apex, smaller than the preceding ones, blending into a pale streak before the apical margin. Hind wings brownish fuscous, with a reddish tinge towards the apex. Expanse of wings 20 millims.

In paler varieties, such as fig. 6, the reddish-brown colour is restricted to an oblique median fascia, a costal spot, and an indistinctly mottled basal patch, all possible intermediate gradations being met with.

Type ♀ (fig. 5) : Georgia, from Mr. Milne's collection. Var. ♂ (fig. 6) : May 19, 1871, near San Francisco.

I should have been inclined to follow Prof. Zeller in placing this species in the genus *Lozotænia*, on account of the apex not being produced as in most species of *Cacœcia*; but it cannot be said to have only a weak costal fold, "sehr schwachem Umschlage und zurückgestrichener Behaarung an demselben," which is considered by Heinemann (p. 31) to be characteristic of *Lozotænia*, the fold in this species being very decided.

The species also occurred about Mendocino in the middle of June, and as far north as Mount Shasta in August. One specimen emerged on the 21st of June from a pupa found a few days previously between united leaves of *Æsculus californica* (Nutt.), the Californian horse-chestnut.

It is widely distributed—Missouri, Ohio, Massachusetts, New York, and Texas being given as localities for it by Zeller and Robinson.

There are now five males and one female in the collection, besides the two named above.

Cacœcia georgiana. (Plate LXII. fig. 7.)

Retinia georgiana, *Walk. Cat. Lep. Het.* xxviii. p. 372.
Tortrix georgiana, *Grote, Bull. Buff. Soc.* pl. i. fig. 4, vol. i. p. 15.

Palpi projecting nearly the length of the head beyond it, together with the head reddish ochreous, the short apical joint exposed: antennæ dull reddish ochreous, pubescent in the male. Fore wings—with appressed costal fold at the base in the male; the costa rounded towards the base; apex rounded; apical margin convex—bright reddish chestnut, with shining pinkish ochreous bands and mottlings; a wide basal patch, its external margin outwardly angulated at the middle, consists of three parallel shining pinkish ochreous fasciæ widening in equal gradations from the base; a rather narrow oblique fascia of the same colour, from the middle of the costa running to the anal angle, is divided about the middle into three separate branches, all reaching the dorsal margin, the first only being narrowly interrupted below the middle (in some varieties these three branches become detached and form separate spots); one or more pinkish ochreous streaks cross the apical portion of the wing from the costa to the apical margin: cilia pinkish ochreous. Hind wings brown, with pale ochreous cilia. Type ♀. Expanse of wings 23 millims.

Georgia. From Mr. Milne's collection.

In the above description I have departed from the usual custom in taking the darker shade to be the ground-colour.

The other North-American specimens, placed by Walker in the genus *Cacoecia* are as follows:—

Cacoecia fervidana, Walk., = *Lozotænia rileyana*, Grote.
(name preoccupied).
—— *triferana*, Walk.: see *Lophoderus triferanus*, p. 15.
—— ? *velutinana*, Walk., = *Lophoderus triferanus*, p. 15.

PTYCHOLOMA, *Stph.*

Ptycholoma melaleucanum. (Plate LXII. fig. 8.)

Lophoderus melaleucanus, *Walk. Cat. Lep. Het.* xxviii. p. 335.
Conchylis invexana, *Walk. Cat. Lep. Het.* xxviii. p. 359.
Ptycholoma? semifuscana, *Clem. Proc. Ent. Soc. Phil.* iii. p. 519; *Grote & Rob. Ins. Tracts N. A.* i. p. 18.
Tortrix melaleucana, *Rob. Trans. Am. Ent. Soc.* ii. pl. iv. fig. 29, p. 271.
Tortrix (Ptycholoma) melaleucana, *Zell. Verh. z.-b. Ges. Wien*, xxv. p. 223.

Palpi projecting less than the length of the head beyond it; the second joint clothed, obtusely thickened; apical joint short, exposed: antennæ of the male slightly pubescent. Fore wings—with the costa arched; an appressed costal fold at the base in the male, a tuft of long yellowish hairs projecting from the base of the costal fold; apical margin obliquely convex—pale shining whitish straw-colour, with lustrous metallic streaks and spots, white towards the costal and apical margins, steel-blue on the darker portions of the wing towards the dorsal margin; a wide umber-brown dorsal patch extending from before the anal angle to the middle of the dorsal margin, and thence, with a slight interruption, less distinctly to the base of the wing; the base of the costal fold in the male is also shaded with umber-brown; and a spot of the same colour lies beyond the middle of the costa in both sexes: these umber markings are all surrounded by a diffused margin of bright yellow, which extends to the costa at a point a little before the middle. Hind wings greyish fuscous, with whitish cilia. Expanse of wings ♂ 18 millims., ♀ 21 millims.

North America. From Mr. Carter's collection. Virginia, Pennsylvania, and Maine (*teste* Robinson), Ohio (*teste* Zeller).

HETEROGNOMON, *Led.*

Heterognomon conflictanus. (Plate LXII. fig. 9.)

Tortrix conflictana, *Walk. Cat. Lep. Het.* xxviii. p. 323.

Palpi stone-grey, projecting about the length of the head beyond it; apical joint exposed, short: antennæ stone-grey, slightly pubescent in the male. Fore wings more than twice as long as wide—with the costa abruptly arched near the base, without a costal fold in the male; the apical margin convex, rather oblique—dark purplish grey, with some slender purplish-fuscous transverse streaks, especially on the apical portion of the wing; an indistinct purplish-fuscous oblique central fascia, much widened at and below the middle, protruding on the middle of its outer edge, where it is indistinctly connected with a costal spot of the same colour beyond the middle; an obliquely outer-margined basal patch is also indistinctly indicated. Hind wings brownish fuscous, with paler cilia. 2 ♂, 7 ♀. Expanse of wings ♂ 26 millims., ♀ 30 millims.

St. Martin's Falls, Albany River, Hudson's Bay. Presented by Dr. Barnston.

Walker places this species in the genus *Tortrix*, Linn., and with it the following :—

Tortrix frigidana, Walk., = *Sarrothripa*, sp. (probably *revayana*), and should be classed with *Noctuidæ*.

—— *scriptana*, Walk. The same remarks apply to this specimen.

—— *concursana*, Walk., = *Platynota flavedana*, Clem.

—— *patulana*, Walk. : see *Cacœcia patulana*, p. 6.

PANDEMIS, *Hüb.*

Pandemis albaniana. (Plate LXII. fig. 10.)

Teras albaniana, *Walk. Cat. Lep. Het.* xxviii. p. 288.
Tortrix lamprosana ?, *Rob. Trans. Am. Ent. Soc.* vol. ii. p. 264, pl. i. fig. 5.

Palpi short, projecting less than the length of the head beyond it: antennæ of male scarcely pubescent, notched at the base. Forc wings—with the costa arched more especially towards the base; apex slightly produced; apical margin concave—pale testaceous, with reddish fawn-brown markings, consisting of an almost obsolete outwardly angulated basal patch, a central fascia dilated at the middle and towards the dorsal margin, and an apical patch chiefly conspicuous towards the costa, with several transverse interjacent streaks of the same colour. Hind wings rather yellowish white. Type ♂. Expanse of wings 23 millims.

St. Martin's Falls, Albany River, Hudson's Bay. Presented by Dr. Barnston.

I also met with the species in California from May to July 1871. Walker's specimen is in bad condition, but appears to agree with Robinson's figure of *T. lamprosana* ; the basal patch, however, is too much rubbed to admit of an accurate comparison. In my Californian specimens, of which one male and one female are now in the British Museum, this is slightly more angulated than in the figure.

LOZOTÆNIA, *H.-S.*

Lozotænia obsoletana. (Plate LXIII. fig. 1.)

Teras obsoletana, *Walk. Cat. Lep. Het.* xxviii. p. 288.
Lozotænia vesperana, *Clem. Proc. Ent. Soc. Phil.* v. p. 136.
Tortrix vesperana, *Rob. Trans. Am. Ent. Soc.* vol. ii. pl. i. fig. 12, p. 266.

Palpi very short, scarcely projecting beyond the head; apical joint exposed. Fore wings—with the costa much rounded, especially towards the base; apex roundcd; apical margin convex; dorsal margin bulged at the base, straight beyond—sericeous, pale reddish straw-colour, with an indistinct reddish-brown basal patch, serrated at its outward edge; a narrow, oblique, pale reddish-brown central fascia from before the middle of the costa to beyond the middle of the dorsal margin; a second abbreviated fascia beyond the middle, and some minute dots along the apical margin of the same colour: underside very shining subdued straw-colour: cilia especially shining. Hind wings whitish grey, with slightly paler cilia. Type ♂. Expanse of wings 20 millims.

North America. From Mr. Carter's collection. Robinson gives Massachusetts, Texas, New York, and Philadelphia as localities.

This is one of several instances in which Mr. Walker has described the outer margin as convex where it is rather concave. I can only account for this by supposing that he has described the appearance given to it by the cilia, which may often deceive the eye as to the actual shape of the wing-margin.

Lozotænia fucana. (Plate LXIII. fig. 2.)

Head, thorax, palpi, and antennæ greyish ochreous: abdomen yellowish grey. Fore wings—with the costa evenly rounded, the apical margin not oblique, the costa slightly bent over towards the middle, but not folded in the male—glossy pale ochreous or straw-colour, with a patch of rusty-brown scales towards the base: an oblique brown fascia commences before the middle of the costa, and runs to beyond the middle of the dorsal margin; this fascia is enlarged on its outer edge by a projection following the upper and outer margins of the cell: the veins are indicated towards the apical margin by fine lines of the same colour; and there is a small patch towards the apex, wider at the costa than beneath it: cilia glossy, pale ochreous. Hind wings white. A variety (not figured) has the fore wings glossy yellowish ferruginous, the costal patch and fascia indicated in rusty brown; hind wings whitish, slightly spotted and dusted with pale fuscous. 4 ♂. Expanse of wings 20 millims.

Southern Oregon, middle of May 1872.

This species differs from *Cacœcia costana* of Europe, to which at first sight it would seem to be allied, principally in the brown shade or fascia being carried conspicuously quite across the wing instead of being partially obsolete below the middle as in that species, as well as in the absence of any decided costal fold in the male, which (in following Heinemann) would be required to class it with that species and *C. semialbana* in the genus *Cacœcia*.

Lozotænia retiniana. (Plate LXIII. fig. 3.)

Head, thorax, and palpi brownish ochreous: palpi very short, ascending; the apical joint slightly depressed: antennæ brownish pubescent. Fore wings—with the costa rather straight, slightly bent over along the middle, but without any decided fold; apical margin convex, scarcely oblique—stramineous ochreous, much reticulated, with slightly raised ferruginous brown streaks and spots, between some of which they are more or less suffused with light reddish brown (1st) on the basal portion of the wing, (2ndly) at the costa before and beyond the middle, (3rdly) on the dorsal margin within the anal angle, and (4thly) above the middle of the wing towards the apical margin, which has a row of ferruginous brown spots running parallel to it. Hind wings and cilia greyish fuscous. The underside of all the wings greyish fuscous, somewhat spotted with pale ochreous along the costal margins. 1 ♂. Expanse of wings 25 millims.

Mount Shasta, California, August 1871.

Lozotænia retana. (Plate LXIII. fig. 4.)

Palpi very short, scarcely projecting beyond the head; apical joint slender, exposed, together with the head and antennæ yellowish ochreous: thorax yellowish, inclining to reddish ochreous, with some pale yellow appressed scales posteriorly; a tuft of long whitish hairs on each side at the base of the abdomen. Fore wings—with the costa slightly arched (without a costal fold in the male); apex rounded; apical margin convex—pale golden yellow, with an irregularly margined basal patch widely reticulated with ferruginous lines, its outer half tinged with pinkish ochreous, and an oblique pinkish ochreous central fascia, interrupted above the middle and narrowly margined with ferruginous, irregularly connected with a dorsal spot of the same colour between them; beyond these is another irregular fascia of the same colour, margined with ferruginous, curved downwards towards the anal angle, and not reaching the apical margin; some ferruginous spots or streaks crossing the apex, the whole having a widely reticulated appearance. Hind wings and cilia yellowish white. 2 ♂, 1 ♀. Expanse of wings 18 millims.

Texas.

Allied to "*Tortrix*" *houstonana*, Grote (Bull. Buff. Soc. i. p. 15, pl. i. fig. 5), of which it may prove to be a variety, although it differs from Grote's figure in the absence of the central shade along the cell and in the presence of a more decided fascia.

Lozotænia franciscana. (Plate LXIII. fig. 5.)

Antennæ pubescent, annulated with white and pale brownish fuscous: head, thorax, palpi, and fore wings whitish, the latter more or less irrorated or suffused with pale brownish fuscous, with an ill-defined and indistinct patch at the base of the wing; an oblique fascia from before the middle of the costa to within the anal angle, a triangular spot at the costa beyond the middle, and a slight shade along the apical margin; all minutely irrorated with brownish-fuscous scales disposed in slender lines. Hind wings very pale brownish fuscous; the cilia whitish. Some specimens are much darker than others, the spaces between the dark markings being more suffused with subfuscous scales. 2 ♂. Expanse of wings 15 millims.

May 16, 1871, San Franciseo.

Taken amongst plants of wild Lupin on the sand hills.

Lozotænia glaucana. (Plate LXIII. fig. 6.)

Head, thorax, antennæ, and palpi brownish grey; the palpi with the second joint thickly clothed with greyish scales, somewhat projecting above the base of the short apical joint. Fore wings—with the costa arched before the middle and slightly indented before the apex; the apical margin oblique—shining pale brownish grey, sometimes minutely speckled transversely with brownish fuscous; a narrow, indistinct, brownish-fuscous fascia before the middle, chiefly visible at the costa, sharply angulated internally below the middle of the wing; a long

semiovate spot of the same colour along the costa halfway between the fascia and the apex: cilia scarcely paler than the ground-colour of the wing: the underside with a slight ochreous tinge along the costa. Hind wings whitish, dusted and speckled with pale brownish fuscous, especially towards the margin. Abdomen whitish grey; anal tuft large, with a slight ochreous tinge. 2 ♂, 1 ♀. Expanse of wings 15½ millims.

Southern Oregon, about the middle of May 1872.

Allied to *L. sescuplana*, Zell., but larger, darker, and more distinctly marked. I have specimens of the true *L. sescuplana* from Shasta County, California, taken at the end of July 1871, as well as some received from Texas, of which specimens are now in the British-Museum collection.

LOPHODERUS, *Stph.*

Lophoderus gloveranus. (Plate LXIII. fig. 7.)

Head whitish grey, thickly clothed above and in front; palpi whitish grey, brownish at the sides, projecting the length of the head beyond it: antennæ slightly pubescent: thorax with a raised ferruginous tuft of scales at the back; patagia of the same colour. Fore wings —with the costa arched; apical margin very oblique, slightly emarginate below the apex— rather shining leaden grey, with a ferruginous patch at the base extending over one fourth of the wing, externally margined with brownish fuscous; an irregular, waved, greyish-fuscous fascia about the middle, clearly defined only on its inner edge; beyond and before it are some transverse streaks and lines of brownish fuscous, especially towards the apex; the apical portion of the costa clothed with brownish fuscous, and some streaks of the same colour running through the grey cilia. Hind wings pale brownish fuscous; cilia paler. 1 ♂. Expanse of wings 19 millims.

Near Mount Shasta, California, Sept. 3rd, 1871.

This species appears to differ from the genus *Lophoderus*, as defined by Stephens, in having the apical margin of the wing slightly indented or emarginate below the apex; but as it agrees in all other particulars, it may perhaps be placed in that genus, at least provisionally. I have named it in honour of Prof. Glover, of the Smithsonian Institute at Washington, who, at the time of my visit in 1871, was most assiduously engaged in entomological work, and to whose kindness I am much indebted.

Lophoderus afflictanus. (Plate LXIII. fig. 8.)

Sciaphila afflictana, *Walk. Cat. Lep. Het.* xxviii. p. 337.
Lozotænia fuscolineana, *Clem. Proc. Ent. Soc. Phil.* v. p. 137.
Tortrix fuscolineana, *Rob. Trans. Am. Ent. Soc.* ii. pl. i. fig. 11, p. 266.

Palpi projecting less than the length of the head beyond it, dingy grey; antennæ the same. Fore wings—with the costa arched, with a fold or flap near the base in the male, not closely appressed; apical margin oblique, not concave—pale ashy grey, with minute wavy

transverse fuscous streaks; an angulated greyish-fuscous fascia near the base, narrowly margined with darker fuscous, a rather oblique greyish-fuscous central fascia also narrowly dark-margined, and an apical patch of the same colour reaching nearly to the anal angle. Hind wings pale greyish fuscous, with whitish grey cilia. The male is slightly larger, with the fasciæ more distinct and conspicuous. Type ♂. Expanse of wings 19 millims.

Nova Scotia. From Lieut. Redman's collection.

Robinson gives Virginia and Massachusetts as localities. I have two females bred from larvæ found hanging from shoots of fir at the beginning of August 1871 on Mount Shasta, California, which emerged at the end of the same month; one is now in the British Museum.

Lophoderus triferanus. (Plate LXIII. fig. 9.)

Cacoecia triferana ♀, *Walk. Cat. Lep. Het.* xxviii. p. 313.
Cacoecia velutinana ♂, *Walk. Cat. Lep. Het.* xxviii. p. 314; *Grote & Rob. Tr. Am. Ent. Soc.* vol. ii. p. 83.
Tortrix lutosana ♂, *Clem. Proc. Ent. Soc. Phil.* v. p. 138; *Rob. Trans. Ent. Soc.* ii. p. 279, pl. vi. f. 59.
Tortrix (Lophoderus) lutosana, *Zell. Verh. z.-b. Ges. Wien*, xxv. p. 225.
Tortrix incertana ♀, *Clem. Proc. Ent. Soc. Phil.* v. p. 138; *Rob. Trans. Am. Ent. Soc.* ii. p. 278, pl. vi. figs. 57, 58; *Pack. Mass. Board Ag.* 1870.

Palpi extending about the length of the head beyond it; the apical joint short, exposed; these, together with the head, dull reddish ochreous: antennæ scarcely pubescent. Fore wings—with the costa arched towards the base, apex not produced, apical margin convex—pale reddish towards the base, with a brownish-fuscous irregular-shaped elongate spot externally pale-margined at the base of the dorsal margin; a wide, oblique, central fascia, deep brownish red, margined on both sides by a narrow shining pale line, and having an indentation on its inner side above the middle; a brownish-fuscous triangular costal spot beyond the middle is preceded by a purplish shade, and followed by a shining silvery patch adjacent to the apical margin, reaching to the anal angle and containing a few ochreous and fuscous scales: cilia shining reddish ochreous. Hind wings pale greyish fuscous; cilia paler. In the male *C. velutinana,* Walk. (*T. lutosana,* Clem.), which is somewhat smaller than the female, the central fascia is narrower and more deeply indented on its inner edge below the costa; the basal patch is more constricted below the middle, and the costa is somewhat less arched towards the base. Type ♀. Expanse of wings 15 millims.

North America. From Mr. Carter's collection. Robinson gives Massachusetts, New York, Pennsylvania, and Ohio as localities.

Prof. Zeller (Verh. z.-b. Ges. Wien, xxv. p. 227), after giving most careful comparative descriptions, expresses the opinion that *T. lutosana,* Clem., is not specifically distinct from *T. incertana,* Clem., and that the two together are not distinct from *politana,* Haw. Grote and Robinson (*l. c.*) point out that *C. velutinana,* Walk., is the same as *triferana,* Walk. A careful comparison of Walker's types shows that his *triferana* is the form described as *incertana* by Clemens, and that his *velutinana* is equivalent to *lutosana.* Messrs. Grote and Robinson are therefore in accord with Professor Zeller in regarding these two as forms of the same species.

I should have been content to drop Walker's two names in favour of *politana*, Haw., being thus guided entirely by Zeller; but he seems to state his views rather as opinions only, than as conclusions which need no further verification. Finding it impossible to conceive that Herrich-Schäffer's figure (413) of *lepidana*, H.-S., which is a synonym of *politana*, Haw., and Robinson's figures of *incertana* and *lutosana*, could have been intended for the same species, I have carefully compared specimens of these latter with a large series of the European *politana*, of which, however, I have no German specimens. With the exception of some few varieties, which do not approach the American forms, the whole of the series agree well with Herrich-Schäffer's figure, but not with those of Robinson nor with my American examples. I have therefore been induced to retain Walker's name for the present, until some further evidence is brought to bear upon the matter. Walker's specimen of *triferana* is a female, not a male, as stated by him in his catalogue; his two specimens of *velutinana* are both males.

Walker's other North-American species are:—

Lophoderus? semiferanus, Walk.: see *Cacœcia semiferana*, p. 7.
—— *vestitanus*, Walk., of which the type is missing in the British-Museum collection.
—— *melaleucanus*, Walk.: see *Ptycholoma melaleucanum*, p. 10.

ŒNECTRA, *Guén.*

Œnectra inconditana. (Plate LXIII. fig. 10.)

Head and thorax ochreous; palpi ochreous, slightly brownish at the sides; antennæ brownish ochreous, ciliated on both sides in the male. Fore wings not more than twice as long as wide—with the costa rounded at the base, slightly arched beyond it; the apex slightly produced; the apical margin nearly straight—together with the cilia unicolorous ochreous, with a slight brownish shade at the base of the costa. Hind wings and cilia whitish ochreous. Underside of all the wings tinged and faintly reticulated with bright saffron towards the margins. Legs and abdomen pale ochreous, saffron beneath. 3 ♂, 1 ♀. Expanse of wings 20 millims.

Pitt River, California, July 26, 1871, and Rouge River, S. Oregon, May 1872.

Œnectra rudana. (Plate LXIV. figs. 1 & 2.)

Palpi chestnut-brown, paler beneath, nearly three times the length of the head; head, thorax, and abdomen somewhat paler; antennæ pubescent in the male. Fore wings—with the costa nearly straight, apex acute—ochreous or straw-colour; the costa brown at the base, with a brownish-purple abbreviated fascia, of varying length, extending from the costa before the middle obliquely outwards towards the dorsal margin; a wide spot of the same colour at the costa, beyond the middle, may sometimes be traced by a row of dots in a crescent across the cell, which in one variety are reduplicated towards the apical margin; a faint chestnut-brown shade runs along the apical margin within the cilia, which are slightly paler than the wings:

the underside of the fore wings greyish fuscous, sometimes tinged with ochreous along the margins. Hind wings greyish fuscous. 4 ♀. Expanse of wings 22 millims.

May and June, near San Francisco, 1871; one specimen occurring near Rouge River, Oregon, May 1872.

Var. α. (Plate LXIV. fig. 2.)

Head, thorax, palpi, and fore wings entirely suffused with chestnut-brown; the half-fascia and costal spot more or less faintly indicated in a purplish tinge. In the brighter and more ochreous specimens the legs are often ochreous, except the first pair of tibiæ, which are darker above; but in the darker specimens the legs are of the same dusky shade as the whole underside of the wings. 2 ♂.

May 17th, 1872, Petaluma, near San Francisco.

Œnectra senecionana. (Plate LXIV. fig. 3.)

Antennæ strongly pubescent in the male: head, palpi, thorax, and fore wings ochreous yellow, with an oblique pale purplish chestnut fascia before the middle of the costa, not reaching the dorsal margin; a shade of the same colour extending from beyond the middle of the costa over the whole apical third of the wing, sinuated on its inner margin, and sometimes interrupted by the pale ground-colour between the veins, within and parallel to the apical margin. The female has the fore wings usually unicolorous pale ochreous chestnut, the fascia and apical shade faintly indicated by a purplish hue: hind wings pale cinereous ochreous, sometimes with a rosy tinge. 3 ♂, 2 ♀. Expanse of wings 16–19 millims.

This species occurred from June 20th to August 6th, from Lake County to Mount Shasta, California; and again at the beginning of May, in Southern Oregon. I bred one specimen from a larva found feeding on a species of *Senecio* in May, which emerged early in June.

CENOPIS, *Zell.*

Cenopis directana. (Plate LXIV. fig. 4.)

Teras directana, *Walk. Cat. Lep. Het.* xxviii. p. 309.
? Cenopis testulana, *Zell. Verh. z.-b. Ges. Wien*, xxv. p. 241.

Palpi reddish brown, projecting more than the length of the head beyond it; the second joint thickened towards its base, and tapering towards the short conical apical joint: head thickly clothed, together with the antennæ reddish brown: thorax reddish brown in front, ochreous behind. Fore wings more than twice as long as wide—the costa evenly arched; apex obtusely rounded; apical margin rather convex, not oblique—deep orange ochreous, minutely irrorated with greenish metallic scales, with an oblique, slender, brownish-purple fascia dilated towards the costa before the middle, and reaching the middle of the dorsal margin; an

irregularly triangular brownish-purple costal spot beyond the middle, merging into and followed by several slender transverse purplish streaks across the apical portion of the wing: cilia shining pale ochreous, shot with purplish. Hind wings shining brownish ochreous. Expanse of wings 20 millims.

This appears to be a pale variety of a species from Texas, which I am assured by Prof. Fernald, who has seen the type, is *Cenopis testulana* of Zeller (Verh. z.-b. Ges. Wien, xxv. p. 241). I can detect no difference between the specimens except in the generally paler hue, especially of the ground-colour of the wing, in Walker's example, for which, unfortunately, no locality is given. One of my dark Texan specimens is now in the British-Museum.

Cenopis gracilana. (Plate LXIV. fig. 5.)

Head, palpi, antennæ, and fore wings stramineous ochreous, the latter with a narrow oblique purplish-fuscous fascia running from before the middle of the costa to the middle of the dorsal margin, dilated at both extremities. Slightly beyond the middle of the costa is a slender angulated line of the same colour, which crosses the wing to a point opposite to the middle of the apical margin, whence it is bent downwards, reaching the dorsal margin before the anal angle; the costa is faintly speckled with reddish ochreous, as is also the apical portion of the wing beyond the angulated line; the cilia and apical margin reddish ochreous. Hind wings greyish white, the cilia having a faint yellowish tinge. Type ♀. Expanse of wings 21 millims.

This species differs from "*Crœsia?*" *reticulatana*, Clem. (Proc. Ac. Nat. Sc. Phil. 1860, p. 353), to which it is allied, chiefly in the form of the angulated line, which is not bent above the middle, and in the absence of any dark shading beyond it or attached to it. The fascia also is less oblique. I have seen no other specimen but the one above described, which was originally given to me by Monsieur de Heidemann, of St. Petersburg, who had received it from New York.

Cenopis diluticostana. (Plate LXIV. fig. 6.)

Head, palpi, and antennæ dull reddish ochreous. Fore wings more than twice as long as wide—with the costa arched; apical margin not convex, dorsal margin scarcely rounded—chestnut-brown, paler (with a yellowish tinge) towards the costa, which is purplish brown at the base, with three purplish-brown fasciæ; the first before the middle oblique, dilated towards the costa, becoming obsolete towards the dorsal margin; the second beyond the middle, narrower, curved outwardly from beneath the costa, and reaching to the anal angle; the third covering the apex and apical margin nearly to the anal angle. Hind wings grey. 1 ♂. Expanse of wings 13 lines.

From the Eastern States of North America.

Cenopis niveana. (Plate LXIV. fig. 7.)

Palpi about twice the length of the head, reddish brown beneath, pale greenish yellow above; the second joint depressed, exposed: head and thorax pale greenish yellow. Fore wings bright shining white, suffused with reddish brown, shot with bright purple over two thirds of their surface, leaving only a conspicuous costal spot, a short basal patch, with a projecting angle at the upper edge of the cell, and a wide band over the cilia and apical margin; the suffused portion of the wing has a mottled appearance on the dorsal half as of the white ground-colour partly appearing through the shading; two small reddish-brown spots on the costa near the base of the wing. Hind wings suffused with very pale ochreous brown over all their surface, except the shining white margins and cilia; underside white, the red markings showing through the wing over the whole middle surface. Expanse of wings 23 millims.

Canada.

I have not had an opportunity of comparing this species with *Tortrix alisellana*, Rob. (Trans. Ent. Soc. Phil. ii. p. 265, pl. i. fig. 15), to which it is nearly allied. That species, however, has not been described as being variable; and the Canadian form figured in this volume differs decidedly from Robinson's figure in the extent and arrangement of the white spaces on the fore wings; but it is possible that it may prove to be only a variety of Robinson's species, which is from Ohio.

Cenopis pulcherrimana. (Plate LXIV. fig. 8.) Dichelia

Palpi scarcely twice as long as the head; both pale yellow straw-colour; antennæ tinged with chestnut-brown. Fore wings—with the costa abruptly arched at the base, nearly straight beyond, slightly rounded at the apex; the apical margin convex; the dorsal margin bulged at the base, straight beyond—pale yellow straw-colour, suffused over a great part of their surface with pale chestnut-brown, such parts having a slightly mottled appearance. The pure ground-colour of the wing appears only in a large triangular costal spot extending from near the base to beyond the middle, in a smaller spot near the base of the dorsal margin, and on the apical margin, where it forms an ovate blotch. Hind wings shining white. 1 ♀. Expanse of wings 17 millims.

From Texas.

Cenopis demissana. (Plate LXIV. fig. 9.) Dichelia

Palpi, head, and antennæ ochreous, more or less shaded with fuscous. Fore wings twice as long as wide—with the costa abruptly arched near the base; the apical margin oblique, not indented; the dorsal margin rounded—ochreous straw-colour, with a faintly reticulated appearance, having an indistinct ochreous spot at the end of the cell. Hind wings very pale straw-colour, tinged along the apical margin with ochreous. 1 ♂, 2 ♀. Expanse of wings 7–8½ lines.

Texas.

Cenopis (?) xanthoides. (Plate LXIV. fig. 10.)

Begunna xanthoides, *Walk. Cat. Lep. Het.* xxvii. p. 190.
Teras xanthoides, *Walk. Cat. Lep. Het.* xxviii. p. 290.
Leptoris breviornatana, *Clem. Proc. Ent. Soc. Phil.* v. p. 140.

Head and palpi ochreous chestnut, the latter projecting three times the length of the head beyond it; the middle joint enlarged near the base, tapering towards the short slender apical joint: antennæ ochreous, not ciliated in the female. Fore wings—with the costa arched, especially towards the base; the apex produced, apical margin concave—ochreous, with a faint purplish gloss; the veins traceable in slender ochreous-chestnut lines connected at short intervals, especially over the apical portion of the wing, by minute transverse streaks of the same colour, giving a reticulated appearance; a darker shade, tending obliquely inwards from the costa beyond the middle, is but slightly indicated; an indistinct spot of tawny-fuscous scales lies on the upper edge of the cell, before the middle of the wing. Hind wings slightly emarginate below the apex, shining whitish, with a faint ochreous tinge, especially about the apical portion of the wing. Type ♀. Expanse of wings 23 millims.

Vancouver's Island. From Dr. Lyell's collection.

Walker originally created the genus "*Begunna*" for the reception of this species, and afterwards transferred it to the genus *Teras*. The type was long missing from its proper place in the collection, and was only lately found at the end of the series of "*Teras*" *rostrana* immediately above it.

There can be no doubt that this is the specimen described by Walker under the name *Begunna xanthoides*; but in the generic description there are two remarkable errors: one is the statement that the "exterior border" is "convex" (the word must have been intended to be concave, a conspicuous character in this insect); the other is the asserted absence of a proboscis, which, although not easily observed, can be detected by a careful examination. I have no doubt that this is the female of *Leptoris breviornatana* of Clemens; and if it does not belong to the more comprehensive genus *Cenopis* of Zeller, in which I have placed it with some hesitation, Walker's genus *Begunna* must probably be retained on the ground of priority.

Before coming to the genus *Dichelia*, Walker describes:—

Batodes bipustulana = *Grapholitha costomaculana*, Clem.
Amphisa luridana = *Simaethis*, sp.

DICHELIA, *Guén.*

Dichelia tunicana. (Plate LXV. fig. 1.)

Head, thorax, and antennæ ochreous brown; patagia ochreous; palpi brown, paler beneath, projecting beyond the head scarcely more than its length; the apical joint depressed; abdomen brown, the anal tuft ochreous; legs pale yellowish grey. Fore wings ochreous yellow, with an oblique chocolate-brown fascia extending from before the middle of the costa nearly to the dorsal margin, and a broad chocolate-brown patch from beyond the middle of the costa covering the whole apical third of the wing, the pale ground-colour forming a sinus on the middle of its inner side; this patch is sometimes connected with the outer edge of the central

fascia at a point near the upper edge of the cell (under a lens these chocolate brown markings are found to be irrorated with sublustrous greenish scales) : cilia ochreous yellow. The underside brownish fuscous, with a yellow patch at the base and on the middle of the costa. Hind wings brownish fuscous; the underside greyish fuscous: cilia greyish fuscous on the inner margin, yellowish grey on the outer margin and at the apex. 2 ♂. Expanse of wings 16 millims.

Lake County, California, May 10th, 1871.

Dichelia californiana. (Plate LXV. figs. 2 & 3.)

Head, thorax, and palpi brownish ochreous; antennæ paler, pubescent in the male; abdomen greyish fuscous, the anal tuft ochreous. Fore wings ochreous, a light reddish-brown fascia from the costa from before the middle, extending obliquely outwards towards the dorsal margin, to the middle of which it is connected by a narrow streak: a wider angulated fascia of the same colour, beyond the middle, is sometimes connected with the central fascia on the dorsal margin. In some varieties the whole apical third of the wing is suffused with the same colour; in others there is a slender streak within the apical margin, and the pale ground-colour encroaches on the outer edge of the second fascia : cilia pale ochreous. Hind wings greyish fuscous. Legs pale yellowish, except the first pair of tibiæ, which are reddish brown. 3 ♂, 2 ♀. Expanse of wings ♂ 15 millims., ♀ 20 millims.

North California, June and July 1871.

In the genus *Dichelia* Walker describes two North-American species :—

Dichelia inconclusana, Walk., = "*Smicrotes*" *peritana*, Clem.
—— *furcatana*, Walk.: see *Capua furcatana*, infra.

CAPUA, *Stph.*

Capua furcatana. (Plate LXV. fig. 4.)

Dichelia furcatana, *Walk. Cat. Lep. Het.* xxviii. p. 319.
Tortrix furcatana, *Rob. Trans. Am. Ent. Soc.* p. 270, pl. iv. fig. 27.
Tortrix (Dichelia) furcatana, *Zell. Verh. z.-b. Ges. Wien*, v. p. 232.

Palpi extending about the length of the head beyond it, both pale straw-colour: antennæ pubescent in male. Fore wings—with a brown appressed costal fold at the base in the male, fringed posteriorly—very pale shining straw-colour, white beneath, crossed by numerous pale ferruginous streaks; a pale ferruginous fascia, narrowly dark-margined, runs obliquely from before the middle of the costa to the anal angle, emitting a branch at right angles on its inner side, which reaches the dorsal margin near the base; this fascia, passing round the anal angle, is connected with a second, shorter ferruginous fascia which leaves the costa beyond the middle, and has also an excrescence on its inner side: the costa at the base and apex is streaked with pale ferruginous, of which colour there is also a slender line along the apical margin. Hind wings white. Type ♂. Expanse of wings 17 millims.

North America. From Mr. Carter's collection. Robinson gives Pennsylvania, Zeller gives New York and Ohio as localities for this species.

Although Mr. Walker's type is a male, he fails to mention the very conspicuous costal fold; and Prof. Zeller, who follows him in placing the insect in the genus *Dichelia,* describes it from two female specimens only, adding the words "revolucro ♂ nullo?"

The presence of the costal fold in the male excludes it from the genus *Dichelia*; but although this and the following species agree in all essential points with the distinguishing characteristic of the genus *Capua* mentioned in Heinemann's synopsis, and with Stephens's original description of it, they differ somewhat from his typical species *Capua ochraceana* in the form of the anterior wings, especially in the less oblique apical margin.

Capua lentiginosana. (Plate LXV. fig. 5.)

Palpi triangular, depressed, acute, dull ochreous at the sides, paler above; head whitish grey; antennæ dull ochreous, pubescent. Fore wings—with the costa arched (an adpressed costal fold at the base in the male); apical margin scarcely oblique, not indented—more than twice as long as wide; dull brownish ochreous, sparingly dotted with fuscous towards the base and apex and along the apical margin, with a conspicuous abbreviated fuscous fascia beyond the middle of the dorsal margin, extending two thirds across the wing, having its inner edge angulated belo w the middle. Hind wings pale subochreous grey. 2 ♂. Expanse of wings 14 millims.

Texas.

These specimens are in bad condition. I should not have described the species without better types, had it not been for its obviously distinct and interesting characters.

SCIAPHILA, *Tr.*

Sciaphila horariana. (Plate LXV. fig. 6.)

Head, palpi, and thorax cinereous grey; antennæ simple in both sexes. Fore wings lanceolate in the male, more than three times as long as wide, grey, sparsely irrorated with cinereous: a narrow outwardly-bent fascia near the base, and another wider about the middle, both cinereous, edged and irrorated with blackish-fuscous scales; the latter is narrowed in the middle, assuming the form of an hourglass, and is connected along the costal and dorsal margins with a pale cinereous shade extending over the apical portion of the wing, leaving a circle of the paler ground-colour between them. Hind wings pale greyish fuscous; cilia slightly paler. A greyish anal tuft in both sexes. 1 ♂, 1 ♀. Expanse of wings ♂ 22 millims., ♀ 18 millims.

Crooked River, near Fort Klamath, Oregon, Sept. 21st, 1872.

Sciaphila trigonana. (Plate LXV. fig. 7.)

Palpi slender, not clothed, projecting about the length of the head beyond it; the apical

joint about half as long as the middle joint: antennæ simple: head whitsh grey. Fore wings—with the costa arched near the base and slightly bent downwards towards the apex, but flattened along the middle; apex somewhat rounded; apical margin oblique—pale whitish grey, irregularly speckled and mottled with dusky cinereous, most conspicuously so in an oblique abbreviated fascia from before the middle of the costa, and a triangular costal patch beyond it, the intermediate space being shaded and streaked with the same colour: some minute abbreviated dusky streaks along the dorsal margin, an irregular double row of dusky cinereous mottlings parallel to the apical margin, and three conspicuous black dots, two before the fascia and one at the end of the cell: cilia stone-grey. Hind wings and cilia rather shining stone-grey. The type figured is a female. 1 ♂, 5 ♀. Expanse of wings 19 millims.

Near Mendocino, California, June 4th, 1871.

Sciaphila basiplagana. (Plate LXV. fig. 8.)

Fore wings lanceolate, three times as long as wide—the anal angle almost obsolete in the general curve of the apical and dorsal margins—stone-grey, slightly mottled with faint greyish fuscous; a dull greyish-fuscous basal patch extending less than one fourth along the wing, with a narrow streak of dull fuscous scales from the costa at its outer edge, followed by two smaller streaks of fuscous scales below and beyond it, tending obliquely towards the middle of the dorsal margin; at a short interval another oblique line of fuscous streaks, each followed by a faint greyish-fuscous shade, appear to indicate the direction of a subobsolete central fascia: there are some faint greyish-fuscous spots along the costa. Hind wings pale brownish grey. 1 ♂. Expanse of wings 17 millims.

Texas.

None of the North-American species placed by Walker in this genus can be considered true *Sciaphilæ*:—

Sciaphila primariana, Walk., = "*Retinia*" *septentrionana*, Curt.
—— *improbana*, Walk.: see *Pædisca improbana*, p. 51.
—— *afflictana*, Walk.: see *Lophoderus afflictanus*, p. 14.
—— *direptana*, Walk., = *Steganoptycha augustana*, Hüb.
—— *implexana*, Walk.: see *Teras pulverosana*, p. 3.
—— *vilisana*, Walk., = *Steganoptycha augustana*, Hüb.
—— *destitutana*, Walk., is in too bad condition to be distinguishable.
—— *puncticostana*, Walk.: see *Sericoris puncticostana*, p. 33.
—— *confixana*, Walk.: see *Phæcasiophora confixana*, p. 36.
—— *decisana*, Walk., = *Exartema fasciatanum*, Clem.
—— *meanderana*, Walk., = *Exartema permundanum*, Clem.
—— *perductana*, Walk., = *Phæcasiophora confixana*, p. 36.
—— *hebesana*, Walk.: see *Penthina hebesana*, p. 31.
—— *luctiferana*, Walk., = *Rhophobota nævana*, Hüb.
—— *ferriferana*, Walk.: see *Exartema ferriferanum*, p. 37.
—— *perstructana*, Walk.: see *Semasia perstructana*, p. 64.
—— *indivisana*, Walk., = ? *S. destitutana*, Walk., and is equally undistinguishable.

SYNNOMA*.

Palpi recte hirsuti, capite ter longiores; articulo secundo fastigate tumido; articulo apicali dimidio breviore, tenui. Haustellum nullum. Antennæ ♂ pectinatæ, ♀ simplices. Alæ anticæ costâ apud basin subarcuatâ; ♂ sine revolucro, margine apicali obliquo; venis 7^a et 8^a a communi pediculo. Alæ posticæ margine subapicali vix impresso, venis 3^a et 4^a sine pediculo, venâ 5^a singulâ non deflectâ, venis 6^a et 7^a a brevi pediculo. Tibiæ hirsutæ. ♀ abdomen tumidum, ultra alas posteriores extensum. Larvæ gregatim sub telâ alitæ.

Palpi extended nearly three times the length of the head beyond it; the first joint short, second joint somewhat flattened and enlarged towards the base; the apical joint about half the length of the second, slender; all thickly clothed with long, straight, hair-like scales: proboscis none: antennæ of the male pectinated, of the female simple. Fore wings with the costa arched towards the base, straight beyond; the apical margin oblique; dorsal margin slightly bulged near the base: without a costal fold in the male: branches 7 and 8 of the fore wings from a common stem. Hind wings with the margin below the apex slightly indented; veins 3 and 4 from the same point without a pedicle; vein 5 separate, not bent over towards them near the base; veins 6 and 7 arising from a short pedicle. Tibiæ hairy. Female with large abdomen, extending beyond the hind wings; the fore wings darker and more suffused than those of the male, which are crossed by silvery streaks.

Allied to *Exapate*, Hüb.

Type *Synnoma lynosyrana*.

Synnoma lynosyrana. (Plate LXV. figs. 9 & 10.)

Palpi three times the length of the head, profusely clothed with straight grey and black hair-like scales: antennæ grey and black, pectinated in the male. Fore wings nearly three times as long as wide—costa nearly straight; apical margin oblique—ochreous, profusely speckled with groups of black scales, and with some scattered steel-blue scales about the middle. On the costa are several short alternate black and yellowish-white spots, tending obliquely inwards, not outwards, as in the costal streaks of most of the *Tortricina*: two irregular oblique shining silvery fasciæ, one near the base and one at the middle of the wing, become less distinct as they recede from the costa; the outer one is angulated in crossing the cell: cilia greyish white, tipped with ochreous. Hind wings and the basal half of their cilia purplish fuscous; the points of the cilia yellowish grey. Abdomen black; hind tarsi and anal tuft yellowish grey. Female with the abdomen larger and much longer than that of the male; antennæ simple: fore wings much darker than in the male, the black scales preponderating over the ochreous, and the silvery fasciæ almost obsolete; the cilia also darker. Legs black, the spurs of the tarsi whitish, and the tarsi spotted with whitish. 5 ♂, 2 ♀. Expanse of wings ♂ 16 millims., ♀ 20 millims.

* *σὺν*, together; *νόμος*, law.

The larvæ feed in colonies, in a web, on *Lynosyris viscidiflora*, the cocoons being also formed in the common web, after the manner of some species of the genus *Hyponomeuta* among the Tineina. I met with them on the plains to the north-east of Mount Shasta, California, at the beginning of September 1871; and the perfect insects emerged at the end of October.

RETINIA, *Guén.*

Retinia subcervinana. (Plate LXVI. fig. 1.)

Head pale fawn-colour above; face white; palpi white, very short, the second joint roughly clothed; antennæ simple. Fore wings silvery whitish, transversely lined and blotched with pale fawn-colour, giving them an almost reticulated appearance, with a few thinly scattered fuscous scales, especially along the costa: cilia white, tipped with fuscous. Hind wings pale brownish fuscous. Legs white, the first pair spotted with fuscous. 2 ♀. Expanse of wings 14 millims.

Rouge River, June 1872.

In the genus *Retinia*, Walker's two American species are as follows:—

Retinia georgiana, Walk.: see *Cacœcia georgiana*, p. 9.
—— *argyrospila*, Walk.: see *Cacœcia argyrospila*, p. 8.

IDIOGRAPHIS, *Led.*

This genus, used by Lederer (Wien. entom. Monat. no. 8. 1859, Band iii. p. 242) and by Heinemann (Schmett. Deutsch. und der Schw. Band i. Heft 1, pp. 31–38) as a subgenus of *Tortrix*, Linn., for the reception of a single species, *T. centrana*, H.-S., = *T. inopiana*, Haw., has been very shortly characterized by these authors. Its affinities appear to bring it nearer to the genus *Cochylis*, Tr., than to *Tortrix*, Linn. The palpi project more than the length of the head beyond it; the second joint is stout and thickly clothed, the apical joint short and exposed. The antennæ are pubescent in the male. The fore wings—with an appressed fold, covering about one third of the costa in the male—are slightly arched, the apical margin rather oblique, convex, the dorsal margin also slightly convex. *Vein 2 of the fore wings arising from the outer third of the cell.* The middle vein of the hind wings with no long hairs at the base. The inner tarsal spur decidedly longer than the outer. Anal tuft moderate.

Separated from *Cochylis* by the decided costal fold in the male, but agreeing in neuration.

Idiographis fulviplicana. (Plate LXVI. figs. 2 & 3.)

Head yellowish straw-colour: palpi not profusely clothed, extending nearly twice the length of the head beyond it, pale whitish yellow above, brown or tawny at the sides beneath: antennæ tawny, pubescent in the male. Fore wings—with the costa arched; apical margin oblique convex; an appressed tawny brown costal fold in the male—rather shining whitish, much blotched with yellowish straw-colour; a tawny spot at the end of the cell precedes an

oblique tawny fascia running to the anal angle across the apical third of the wing; beyond it the costa and apical margin are spotted with pale tawny; sometimes an oblique tawny spot lies across the cell at the outer edge of the basal third of the wing: vein 2 of the fore wings arising from the outer third of the cell. Hind wings pale fuscous grey; the cilia paler, with a grey line within them. Female having much the appearance of a true *Cochylis*; smaller than the male: fore wings narrow, the apical third much suffused with tawny; its inner margin oblique from the anal angle; a sharply angulated tawny fascia in the middle of the wing, wider towards the dorsal margin, is narrowly and obliquely interrupted at its angle; also a tawny spot on the base of the costa.

Var. α. ♂. Fore wings mottled whitish and very pale straw-colour; the costal fold tawny; the apical fascia and basal spot obsolete; some very pale tawny spots and streaks on the apical third of the wing. 5 ♂, 2 ♀. Expanse of wings ♂ 22 millims., ♀ 17 millims.

Shasta County, California, June and July 1871.

This species is allied to *T. inopiana*, Haw. (*centrana*, H.-S.), Wood. fig. 1159. Heinemann places *centrana* in the subgenus *Idiographis* of Lederer, but confuses *inopiana* with *hepatariana*, H.-S., a true *Pædisca*. Its affinities were recognized by Stephens, who classed it with *Cochylis zœgana* and *C. hamana* in his genus *Xanthosetia*; and Doubleday, in his 'Synonymic List of British Butterflies and Moths,' places *inopiana*, Haw. (*centrana*, H.-S.), in the genus *Cochylis*, Tr. I have followed them in now referring *Id. fulviplicana* at least to the neighbourhood of the same genus. Its structure and neuration must necessarily place it there, according to the rules laid down in Heinemann's synopsis, which also draw attention to its obvious affinity.

Idiographis ægrana. (Plate LXVI. fig. 4.)

Palpi white above, fawn-brown at the sides and beneath, nearly three times the length of the head, thickly clothed with long scales projecting below the apical joint, which is slightly exposed and rather pointed: head white; antennæ pale brown, slightly pubescent in the male. Fore wings—with the costa gently arched; an appressed fulvous costal fold at the base—creamy white, faintly speckled with thinly scattered fawn-coloured scales, especially beyond the middle, with a fulvous dot at the end of the cell, followed by a slender line of fawn-coloured dots running obliquely from the costa beyond the middle to the anal angle, above which it is slightly angulated: beyond this line the apical portion of the wing is faintly speckled with lines of pale fawn-coloured dots; a very slender line of the same colour at the base of the cilia in the fore and hind wings, more plainly visible on the underside of the anterior wings. Hind wings white, very faintly speckled with pale fawn-colour; cilia white. Underside of fore wings much shaded with fawn-brown. 2 ♂, 2 ♀. Expanse of wings 20 millims.

Southern Oregon, June 1872.

This is nearly allied to the preceding species, *I. fulviplicana*, but is easily distinguished by the white ground-colour of the wings. I have seen no intermediate forms among a considerable series of varieties of *fulviplicana*; and the present species does not appear to vary.

Idiographis floccosana. (Plate LXVI. fig. 5.)

Conchylis floccosana, *Walk. Cat. Lep. Het.* xxviii. p. 358.
Tortrix confusana, *Rob. Trans. Am. Ent. Soc.* ii. p. 274, pl. v. fig. 43.

Palpi very pale yellowish, tinged with orange-brown at the sides, projecting more than the length of the head beyond it; thickly clothed with long scales; the apical joint very short, scarcely exposed: head and antennæ (which are pubescent in the male) very pale yellowish. Fore wings more than twice as long as wide—with the costa evenly arched, folded at the base, the apex rounded; apical margin oblique; dorsal margin bulged at the base, straight beyond—together with the thorax very pale shining yellowish straw-colour, with the base of the costal margin and the greater part of the dorsal margin nearly to the anal angle bright orange-brown, blending into the paler ground-colour of the wing above the middle and towards the anal angle, and not approaching the apex or apical margin. Hind wings shining pearly grey, with long concolorous cilia. Type ♂. Expanse of wings 15 to 17 millims.

From Mr. Carter's collection, and from Nova Scotia in Lieut. Redman's collection. Robinson gives Pennsylvania as a locality.

COCHYLIS, *Tr.*

Cochylis intactana. (Plate LXVI. fig. 6.)

Palpi whitish ochreous brown at the sides: head and thorax whitish: antennæ of the male setose, faintly annulated with ochreous brown. The fore wings—with the costa arched; apical margin oblique, not indented—pale straw-colour; the base of the costa ochreous brown, with a basal patch, a central fascia, and a shade along the apical margin very faintly indicated straw-colour, scarcely distinguishable from the ground-colour of the wing. Hind wings grey, with whitish cilia. Abdomen grey, with a straw-coloured anal tuft. 1 ♂. Expanse of wings 14 millims.

Siskiyon County, California, at the end of June 1872.

This species is nearly allied in form and general appearance to *Cochylis hamana* and *C. zœgana* of Europe, but much smaller and paler.

Cochylis fernaldana. (Plate LXVI. fig. 7.)

Palpi whitish, ochreous at the sides, projecting nearly twice the length of the head beyond it, clothed with long scales projecting beyond the apical joint: head whitish, rather tufted in front: antennæ of the male very strongly pubescent: thorax whitish, the patagia ochreous. Fore wings yellowish straw-colour, with ochreous or brownish-ochreous markings; an angulated fascia, sometimes ill-defined towards the costa, encloses the short basal patch; a triangular pale-centred spot, rather beyond the middle of the dorsal margin, is overlapped at its point by a short oblique streak from the costa, beyond which is a costal spot before the apex, and a rather indistinct streak or shade running parallel to the apical margin:

the cilia are the same as the ground-colour of the wing; and the hind wings are white or greyish white. 4 ♂, 1 ♀. Expanse of wings 17 millims.

September 1871, North California; and June 1872, Southern Oregon.

In naming this insect after Prof. Fernald, of Maine State College, I take this opportunity of thanking him again for much valuable information and assistance.

Cochylis scissana. (Plate LXVI. fig. 8.)

Conchylis scissana, *Walk. Cat. Lep. Het.* xxviii. p. 360.

Palpi projecting fully the length of the head beyond it, closely clothed; the apical joint not exposed: antennæ brownish, the first pair of tarsi dark brown. Fore wings three times as long as wide—the costa nearly straight; apical margin oblique, slightly concave—golden yellow, with an almost uninterrupted line of purplish-brown dots and streaks along the costa, with a faint shade continued along the apical margin to the anal angle; a wide oblique streak from before the middle of the dorsal margin and some indication of a dorsal spot beyond it towards the anal angle: cilia pale golden yellow. Hind wings cinereous, with paler cilia. Type ♂. Expanse of wings 15 millims.

Nova Scotia. From Lieut. Redman's collection.

Cochylis parallelana. (Plate LXVI. fig. 9.)

Palpi whitish, brownish ochreous at the sides: head dull ochreous: antennæ brownish. Fore wings three times as long as wide—with the costa scarcely arched; apical margin oblique—shining whitish, blotched with yellowish ochreous; the costa brownish ochreous at the base, with a brownish ochreous oblique fascia about the middle of the wing, outwardly angulated below the costa, and an abbreviated fascia of the same colour running parallel with it from before the apex to the lower corner of the cell. Hind wings grey, with paler cilia. 2 ♂, 2 ♀. Expanse of wings 14 millims.

Lake County, California, June 18th, 1871.

This and the following species are somewhat nearly allied to *Cochylis lepidana*, Clem.

Cochylis transversana. (Plate LXVI. fig. 10.)

Palpi whitish, ochreous at the sides: head white. Fore wings three times as long as wide, rather shining white, with a slight yellowish tinge, with an ochreous-brown irregular oblique fascia about the middle, and another of the same colour running from the costa before the apex to the middle of the apical margin; some brown spots on the costa towards the base, and a pale ochreous blotch above the anal angle: the apex and cilia yellowish ochreous. Hind wings grey, with paler cilia. 2 ♀. Expanse of wings 14 millims.

The north of Shasta County, California, June 26th, 1871.

Nearly allied to *C. parallelana,* but with the head white, and the second fascia not parallel to the first, but crossing the apical portion of the wing obliquely to the apical margin.

Cochylis saxicolana. (Plate LXVII. fig. 1.)

Head and palpi greyish, touched with brown at the sides; the apical joint exposed. Fore wings nearly three times as long as wide, pale brownish, with some ill-defined sublustrous streaks and mottlings: a conspicuous, ferruginous-brown, obliquely elongated spot before the middle of the dorsal margin, pointing towards a wider dull brownish patch on the costa, which is the commencement of a subobsolete, angulated, median fascia; a narrow, indistinct, brownish fascia crosses from the costa beyond it to the anal angle; and the apex and apical margin are spotted with the same colour. Hind wings pale, faintly rosy grey. 3 ♂. Expanse of wings 13 millims.

Southern Oregon, end of May 1872.

Cochylis latipunctana. (Plate LXVII. fig. 2.)

Head and palpi greyish white, tinged with fuscous at the sides: antennæ faintly annulated. Fore wings nearly three times as long as wide, with some faint greyish-fuscous reticulations and blotches; the base partly suffused with pale greyish fuscous, especially on the costa; a wide, abbreviated, fuscous-brown half-fascia before the middle of the dorsal margin, pointing towards a pale greyish-fuscous spot on the middle of the costa, beyond which, before the apex, is another, similar spot; the apical margin is spotted greyish fuscous, and the cilia partly suffused with a paler shade of the same colour. Hind wings greyish. 2 ♂. Expanse of wings $14\frac{1}{2}$ millims.

Mendocino County, May 31st, 1871.

Cochylis dilutana. (Plate LXVII. fig. 3.)

Head and palpi whitish. Fore wings three times as long as wide—with the costa nearly straight; apical margin very oblique—chalky white, with a pale fawn-coloured shade at the base of the costa; an oblique abbreviated pale fawn-coloured fascia before the middle of the dorsal margin, pointing towards a spot of the same colour on the middle of the costa, and some faint fawn-coloured spots towards the apex and along the apical margin: cilia white, touched with pale fawn-colour. Hind wings pale grey, with whitish cilia. 1 ♂, 1 ♀. Expanse of wings 13 millims.

Early in May, Oregon.

Cochylis campicolana. (Plate LXVII. fig. 4.)

Head, face, and palpi reddish brown: antennæ brownish. Fore wings nearly three times as long as wide—costa not arched, slightly depressed at the apex; apical margin oblique, not

indented—faint rosy white, streaked and clouded, especially on the apical portion of the wing, with pale olive-grey; a brownish-fuscous spot on the middle of the costa is connected with an oblique abbreviated dorsal patch of the same colour by an indistinct outwardly angulated and sometimes interrupted olive-grey band; some smaller costal spots beyond it and a slender line along the apical margin greyish fuscous: cilia light reddish brown, mixed with fuscous. Hind wings subreticulated with whitish grey. In the female the apical portion of the fore wings is more clouded and suffused with grey, and the hind wings are darker than in the male. 3 ♂, 2 ♀. Expanse of wings ♂ 16–18 millims., ♀ 14 millims.

Mendocino County, June 10th, 1871.

This species is nearly allied to *C. pallidana* (Zell. Isis, 1847, p. 742), but appears to differ from it in the wider grey band towards the apex, in the more conspicuous costal spot, and in the wider dorsal patch.

Cochylis parvimaculana. (Plate LXVII. fig. 5.)

Head, antennæ, and palpi greyish fuscous. Fore wings not three times as long as wide —the costa slightly arched—dull whitish, faintly mottled with pale greyish fuscous; a small greyish-fuscous basal patch is projected along the costa to one fourth of its length, followed by a greyish-fuscous spot on the middle of the costa; the whole apical portion of the wing from the costa to the anal angle, as well as the cilia, irregularly streaked, mottled, and suffused with greyish and purplish fuscous; a small, purplish-fuscous, obliquely elongated spot before the middle of the dorsal margin. Hind wings pale brownish grey, faintly mottled. 1 ♂. Expanse of wings $16\frac{1}{2}$ millims.

Shasta County, July 16th, 1871.

Under the generic name of *Conchylis*, Walker describes also the following North-American species:—

Conchylis invexana, Walk., =*Ptycholoma melaleucanum*, see p. 10.
—— *gratana*, Walk., =*Cræsia* ? *reticulatana*, Clem., var. *sulfureana*.
—— *cretiferana*, Walk. This belongs to the Noctuidæ ?

PENTHINA, *Tr.*

Penthina consanguinana. (Plate LXVII. fig. 6.)

Palpi short, obtuse: antennæ slightly pubescent: thorax mottled white and brownish fuscous, with a raised umber-brown tuft behind it. Fore wings—with the costa evenly arched; the apex rounded; apical margin oblique, not indented—rather yellowish white, with an oblique narrow fascia near the base and a rather oblique broad central fascia, convex at its outer edge and much widened towards the dorsal margin, mottled with brownish fuscous, the space between them as well as the base of the wing being almost obscured by brownish-fuscous

streaks and mottlings; three small costal spots are conspicuous between the fasciæ; beyond the outer fascia are four or five grey costal spots and a triangular grey shade at the apex, which is continued in a broken line along the apical margin; before this is a greyish-fuscous horseshoe-shaped spot, conspicuous upon the plain ground-colour of the wing, sometimes connected at its outer edge with the apical margin: a pale fuscous line runs within the base of the cilia, the points of which are also touched with fuscous. Hind wings whitish stone-grey, with paler cilia. Abdomen and anal tuft slightly ochreous. 3 ♂, 2 ♀. Expanse of wings 21 millims.

This species differs from *P. variegana*, Hübn. (No. 937, Wocke's Cat.), in having no grey shading on the plain apical portion of the wing, with the exception of the one horseshoe-shaped spot, also in the larger and more diluted costal spots and more defined central fascia. It lacks the strong ochreous tint of *P. ochroleucana*, Hübn. (No. 939, Wocke's Cat.), and has paler hind wings than that species; and it may be at once distinguished from *P. capreana*, Hübn. (*P. mœstana*, Wocke; No. 931, Wocke's Cat.), by the convex (not concave) outer edge of the central fascia. In a considerable series from California, obtained in May, June, and July, I have found no specimen which could not at once be separated from the numerous nearly allied European forms, at least so far as I am acquainted with them.

Penthina nimbatana, Clem., which is the *Penthina contrariana* of Walker, differs from *consanguinana* in its smaller size and in the almost unspotted white apical portion of the wing, which contains no horseshoe mark.

Penthina conditana. (Plate LXVII. fig. 7.)

Palpi depressed, greyish fuscous: head and antennæ greyish fuscous. Fore wings more than twice as long as wide—the apical margin scarcely oblique, slightly convex; apex rounded; the costa somewhat arched—brownish fuscous, speckled or blotched with yellowish stone-colour, especially towards the base and on the outer portion of the costa, suffused before and beyond the middle with a purplish hue, leaving the darker ground-colour in an ill-defined rather straight fascia across the middle of the wing, with a slight angulated excrescence about the middle of its outer edge, and in a narrow space along the apical margin: the purplish suffused band beyond the central fascia is divided into two almost equal parts below the middle by a line running parallel to the apical margin. Hind wings dark brown. 2 ♂. Expanse of wings 12 millims.

Mendocino County, May 24th, 1871.

Penthina hebesana. (Plate LXVII. fig. 8.)

Sciaphila hebesana, *Walker*, *Cat. Lep. Het.* xxviii. p. 342.
Carpocapsa inexpertana, *Walker*, *Cat. Lep. Het.* xxviii. p. 394.
Penthina fullerea, *Riley*, *Journ. Hort. Bost.* 1868, fig.; *Treat*, *Am. Ent.* ii. p. 204.
Sericoris fœdana, *Clem. Proc. Ent. Soc. Phil.* v. p. 135." = Exartema concinnanum Clem.

Palpi projecting scarcely the length of the head beyond it; the second joint thickened;

the short apical joint depressed and exposed. Fore wings about twice as long as wide—with the costa slightly arched; apex rounded; apical margin oblique, slightly convex—brownish, with a purplish gloss on the basal half, more pinkish on the apical half of the wing, much mottled throughout with irregular purplish-fuscous spots and bands; an irregular dark fuscous-brown central fascia, with a projecting excrescence about the middle of its outer edge, with a slight sinuation on either side; an ill-defined brownish-fuscous basal patch, with a purplish spot near the base of the dorsal margin; a conspicuous semilunar brown spot, outwardly margined with fuscous, lies between the end of the cell and the apex; above it is a bright ferruginous narrow band along the costa, passing round the apex and along the apical margin to the anal angle, separated from the rather fuscous cilia by a slender line. Type ♂. Expanse of wings 15 millims.

North America. From Mr. Carter's collection. Also in Shasta County, California, July 1871.

Riley gives seeds of *Tigridia* as the food of the larva. Mrs. Treat reared it from buds of *Verbena*.

In *Penthina* Walker's North-American species are:—

Penthina similisana, Walk., = *Sericoris bipartitana*, Clem.
—— *contrariana*, Walk., = *Penthina nimbatana*, Clem.
—— *dealbana*, Walk.: see *Sericoris dealbana*, p. 34.
—— *transmissana*, Walk.: see *Pædisca transmissana*, p. 52.
—— *ochreoalbana*, Walk., = *Cochylis nana*, Haw.
—— *resumptana*, Walk.: see *Pædisca resumptana*, p. 44.
—— *subnivana*, Walk.: see *Teras subnivana*, p. 1.

SERICORIS, *Tr.*

Sericoris vetulana. (Plate LXVII. fig. 9.)

Palpi projecting about the length of the head beyond it, roughly clothed, the long scales below projecting as far as the end of the exposed apical joint; these, together with the head, antennæ, and thorax (which is tufted behind), cinereous brown. Fore wings more than twice as long as wide—the costa arched; the apical margin scarcely oblique—greyish cinereous, with a brown fascia from the middle of the costa, not reaching the dorsal margin, and having an excrescence on its outer edge, the whole having the appearance of an inverted chess-knight; a brown triangular spot on the dorsal margin before the anal angle, sometimes joined to a second brown shade or blotch below the apex, which tends obliquely towards the apical margin: some few brown abbreviated streaks from the costa, a very ill-defined sometimes obsolete basal patch, and a brown line along the apical margin at the base of the cilia, which are cinereous. Hind wings rather brownish; cilia paler. 5 ♂. Expanse of wings 15–17 millims.

Northern California, early in June 1872, also from Texas.

Allied to *Penthina antiquana*, Hübn. (Staud. and Wocke, 1003), which it greatly resembles, but much smaller. In a long series I have seen none which approach the size of the European species.

Sericoris auricapitana. (Plate LXVII. fig. 10.)

Palpi short, projecting but little beyond the head; the apical joint scarcely exposed, together with the head and basal joint of antennæ bright orange-yellow: antennæ fuscous. The fore wings brownish fuscous, irrorated with orange-yellow and with shining steel-blue spots and streaks; the spots are most conspicuous about the base of the wing and before the middle of the costal margin, with some of smaller size on the cell and below it. There are two costal streaks of the same colour running obliquely towards the apical margin, and a wider one more conspicuous about the ocellated patch above the anal angle. A conspicuous orange-yellow patch on the costa, before the apex, reaches across towards the apical margin, which with the cilia is bluish fuscous. Hind wings fuscous brown, paler towards the base, with ochreous-white cilia. 2 ♂. Expanse of wings 12 millims.

I have seen specimens of this species in the collection of the Entomological Society at Philadelphia under the MS. name of "*pantherana.*" It seems to be nearly allied to *Endopisa agilana*, Clem., which is probably also a small *Sericoris*. The two original species included by Guénée in the genus *Endopisa*, namely *E. nigricana* and *E. proximana*, are placed in Staudinger and Wocke's Catalogue under the genus *Pædisca*, to which *Endopisa agilana* cannot belong, as it has no costal fold in the male. *S. auricapitana* comes rather near to the larger *S. siderana*, Tr., of Europe.

Sericoris puncticostana. (Plate LXVIII. fig. 1.)

Sciaphila puncticostana, *Walk. Cat. Lep. Het.* xxviii. p. 339.

Palpi very pale buff, tinged with brown at the tips, projecting about the length of the head beyond it, hirsute; the apical joint not exposed. Head pale buff, mixed with brown. Fore wings—with the costa slightly arched; apical margin rather oblique—very pale buff, with an irregularly margined basal patch, a wide central fascia connected with it by a narrow band on its inner edge, a dorsal spot before the anal angle, a large subapical patch, and a spot at the apex all deep olive-brown, irrorated with very pale buff scales and margined with bright shining silvery metallic lines and spots; some shining silvery spots along the costa alternating with small olive-brown dots: cilia slightly paler than the wings. Hind wings pale whitish grey. 1 ♂, 1 ♀. Expanse of wings 20 millims.

Nova Scotia. From Lieutenant Redman's collection.

Sericoris dilutifuscana. (Plate LXVIII. fig. 2.)

Palpi short, obtuse, the second joint clothed with long greyish-fuscous scales; the apical joint slightly exposed, whitish: antennæ brownish fuscous. Fore wings white, delicately

streaked and dotted with greyish fuscous; the basal patch greyish fuscous, its outer edge angulated about the middle and indented below it; a greyish-fuscous central fascia widest towards the dorsal margin, narrower towards the costa, containing some tawny scales, sometimes wholly, sometimes partially interrupted along the cell; the apical portion of the wing delicately streaked along the costa with greyish fuscous; a spot at the apex and an interrupted streak of the same colour extending obliquely upwards from the apical margin above the anal angle, with a slender greyish-fuscous line along the base of the cilia, which are white with a few fuscous spots. Hind wings pale greyish fuscous. 2 ♂. Expanse of wings 16 millims.

Southern Oregon, June 2nd, 1872.

This insect differs from its nearest allies *Sericoris bipartitana*, Clem. (= *similisana*, Walk.), and *Sericoris dealbana*, Walk., in the white ground-colour of the fore wings being delicately streaked, as well as in the apical half of the costal margin being streaked rather than spotted: moreover it has a generally greyer tinge than those two species, the darker markings of which are blackish.

Sericoris dealbana. (Plate LXVIII. fig. 3.)

Penthina dealbana, *Walk. Cat. Lep. Het.* xxviii. p. 374.

Palpi brown, tipped with whitish, with the second joint roughly clothed below; the apical joint exposed, scarcely projecting beyond the head, which with the antennæ is also brown. Fore wings—with the costa slightly arched; apex rounded; apical margin oblique—white, with an outwardly angulated basal patch; a slightly oblique central fascia indented about the middle of its inner edge and dilated outwardly on the dorsal margin, beyond it three costal spots and one larger apical spot or shade running through the cilia, also an oblique elongated patch from the apical margin above the anal angle to a point below the middle costal spot, all these markings pale olive-brown irrorated with darker brown scales; some minute abbreviated brownish streaks between the costal spots and patches, especially towards the apex: the pale ground-colour of the wing is not striated; and the costal spots are wider and more conspicuous than any to be found in *Sericoris dilutifuscana*. Hind wings pale cinereous, with whitish-grey cilia, slightly shaded round the apex. Type ♂. Expanse of wings 18 millims.

North America. From Mr. Carter's collection.

This species stands in the collection of the Entomological Society of Philadelphia under the MS. name of *Antithesia hebascana*, Clem.

Sericoris chalybeana. (Plate LXVIII. fig. 4.)

Head saffron mixed with fuscous: palpi stout, compressed, projecting scarcely the length of the head beyond it; the apical joint exposed, whitish grey; the apex fuscous: antennæ fuscous. Fore wings bright saffron (twice as long as wide, the costa regularly arched, apical margin rather straight, not indented), blotched with blackish fuscous, most noticeable in two

oblique fasciæform shades, one from the middle of the costa to the dorsal margin, the other before the apex, extending through the cilia above the anal angle: several shining steel-blue spots from the base to beyond the middle of thc wing, followed by two or three streaks of the same colour in the apical third. Hind wings fuscous brown; the cilia variable, brownish or yellowish white. 3 ♂, 2 ♀. Expanse of wings 15 millims.

Siskiyou Mountains, on the borders of Oregon and California, June 1872.

Sericoris inquietana. (Plate LXVIII. fig. 5.)

Pædisca inquietana, *Walk. Cat. Lep. Het.* xxviii. p. 378.
Mixodia? sp., *M'Lachlan, Journ. Linn. Soc., Zool.* xiv. no. 74, p. 116.

Palpi whitish grey, projecting scarcely the length of the head beyond it, the middle joint thickened, apical joint depressed, exposed: head and antennæ greyish fuscous: thorax brownish fuscous in front, greyish behind. Fore wings—with the costa straight; apex rounded; apical margin oblique, not indented—whitish grey, streaked and mottled irregularly with brownish scales; with a brownish mottled basal patch, mixed with fuscous, projecting along the upper edge of the cell, indented below it, and a central fascia of the same colour, of which the inner edge follows irregularly the line of the basal patch; this fascia has a small sinuous indentation on the projecting portion of its outer edge, above the middle, and is widest on its dorsal half, but narrowed at the costa: the apical portion of the wing is irregularly streaked and mottled with a series of brownish spots, mixed with fuscous scales: cilia greyish white. Hind wings dull dingy grey. Type ♀. Expanse of wings 24 millims.

Arctic America. Presented by Sir J. Richardson.

Two specimens of this species, brought by Mr. Hart from the winter quarters in Grinnell Land of the 'Discovery' in the last Polar Expedition, are mentioned by Mr. M'Lachlan (Journ. Linn. Soc., Zool. xiv. no. 74, p. 116) as probably identical with specimens in bad condition in the British-Museum collection representing *Retinia septentrionana* of Walker's catalogue (pt. xxviii. p. 373). He adds that they do not agree with the description of *Orthotænia septentrionana,* Curt. (App. Ross's 2nd Arctic Voyage, p. 77). Curtis gives the expanse of the wings of his species as 7 lines, and Walker's specimens under that name measure about 8½ lines, whereas those described by M'Lachlan (expanding 11½ lines) appear to agree with *S. inquietana* (11½ lines) not only in structure and markings, but also in measurement.

Walker's *Sciaphila primariana,* measuring 7 lines, is evidently the same species as his supposed *septentrionana,* Curt., which I venture to think would have agreed with Curtis's description had they been in better condition.

Packard's descriptions of *Penthina tessalana* (expanse under 8 lines) and *P. fulvifrontana* (expanse about 7 lines), in the Proc. Bost. Soc. Nat. Hist. xi. pp. 55, 56, and Clemens's description of *Mixodia? intermistana,* Proc. Ent. Soc. Phil. v. p. 140, which must all be closely allied species, appear to agree more nearly with *septentrionana,* Curt., than with *inquietana* Walk.

PHÆCASIOPHORA, *Grote.*

Phæcasiophora confixana. (Plate LXVIII. fig. 6.)

Sciaphila confixana, *Walk. Cat. Lep. Het.* xxviii. p. 340.
Sciaphila? perductana, *Walk. Cat. Lep. Het.* xxviii. p. 341.
Sericoris mutabilana, *Clem. Proc. Ent. Soc. Phil.* v. p. 135.
Phæcasiophora mutabilana, *Grote, Bull. Buff. Soc.* i. p. 90, pl. 11. figs. 4–6; *Zell. Verh. z.-b. Ges. Wien*, xxv. p. 276.
Sericoris permundana, *Grote & Rob. Trans. Am. Ent. Soc.* ii. p. 83.

Palpi dingy brownish grey, projecting less than the length of the head beyond it; the second joint thickly clothed; apical joint exposed, fuscous: head brownish grey, thickly clothed above; antennæ scarcely pubescent. Fore wings—with the costa arched, the apex slightly rounded, apical margin convex—pale fawn-brown, mixed with fuscous scales, with a short indistinct basal patch; an oblique geminated wavy fascia dilated outwardly on the dorsal margin, and a similar, rather narrower, geminated fascia beyond the middle, all pale whitish ochreous with a faint rosy tinge; the first has two small excrescences, one on the outer side, at the middle, the other on the inner side near the dorsal margin; the second has a projection on its inner edge reaching to the dorsal extension of the first, and is continued round the anal angle in a series of detached spots along the apical margin, where it is joined by some geminated subapical streaks from the costa: cilia whitish, especially at the anal angle, touched with fawn-brown above it. Hind tibiæ covered with long coarse whitish scales in the male. 2 ♂. Expanse of wings 19 millims.

North America: from Mr. Carter's collection. New York, Pennsylvania, and Virginia (*Grote*).

In redescribing this species I have reversed the usual practice of mentioning first the paler shades of the wing-colours, thus making the description entirely independent of those of other authors, whilst endeavouring not to fall short of them in accuracy or simplicity. Messrs. Grote and Robinson (*l. c.*) consider Walker's *Sciaphila confixana* to be the *Exartema permundanum* of Clemens; but a careful examination does not support this view.

EXARTEMA, *Clemens.*

Exartema sericoranum. (Plate LXVIII. fig. 7.)

Palpi yellowish white, erect; the second joint thickly clothed beneath; the apical joint short, exposed, tipped with fuscous: antennæ dull ochreous, slightly pubescent in the male: head, thorax, and patagia ferruginous. Fore wings—twice as long as wide; costa arched; apical margin slightly convex—ferruginous, slightly shaded with fuscous, with irregular fasciæ and streaks, bluish grey internally, narrowly margined with whitish ochreous. The first fascia is geminated at the costa before the middle, bulged on its outer edge along the cell,

and narrowed as it attains the dorsal margin; the base of the wing between this marking and the thorax is somewhat mottled with the same shades as compose the fascia; the second fascia originates in a geminated oblique costal streak scarcely beyond the middle, which just reaches to the next costal streak beyond it, thence diverging at an angle to the apical margin, of which it covers the lower fourth with the anal angle; this fascia has an excrescence on its inner edge projecting along the cell; and below this excrescence is a branch running to the dorsal margin, which branch also has a projecting excrescence on its inner edge. Towards the apex are three geminated costal streaks; the first, after touching the outer angle of the fascia as described, converges, with the other two, towards the middle of the apical margin. The above-described markings leave the ferruginous ground-colour of the wings most conspicuous, in a wide central band, a triangular dorsal spot before the anal angle, and an ovate patch, projecting obliquely inwards, rising from below the middle of the apical margin. The costa is shaded with fuscous between the streaks; and there is a narrow fuscous line along the apical margin. The markings and general appearance of this insect remind one strongly of those of a *Sericoris*. 1 ♂, 1 ♀. Expanse of wings 17 millims.

North America.

Exartema punctanum. (Plate LXVIII. fig. 8.)

Head brown, tufted above; palpi whitish, the second joint thickly clothed with long scales projecting below the exposed apical joint, which is fuscous; antennæ scarcely pubescent in the male. Fore wings whitish fawn-colour blotched with olivaceous fuscous; an angulated blotch at the base of the dorsal margin, another on the middle of the costa, another rather darker covering the apex and apical margin, and two paler olivaceous blotches, one on the middle of the dorsal margin, another before the anal angle; also some abbreviated streaks along the costa; the space between the blotches contains some very sublustrous leaden-grey lines and bands; a slender pale line, followed by a wider fuscous line, runs along the apical margin at the base of the cilia; a fuscous spot lies within the end of the cell. Hind wings brownish, darker towards the margin; cilia whitish, with a dark line along them as in the fore wings. 1 ♂, 2 ♀. Expanse of wings 17 millims.

Shasta County, July 12th, 1871.

This species is nearly allied to *Exartema inornatanum*, Clem., which, Prof. Fernald informs me, is probably the *E. quadrifidum* of Zeller (Verh. z.-b. Ges. Wien, xxv. p. 268); but the markings are more defined, and the spot at the end of the cell constitutes a good distinguishing character.

Exartema ferriferanum. (Plate LXXV. fig. 4.)

Sciaphila? ferriferana, *Walk. Cat. Lep. Het.* xxviii. p. 343.
Sericoris gratiosana, *Clem. Proc. Ent. Soc. Phil.* v. p. 134.
Grapholitha (Pœcilochroma?) usticana, *Zell. Verh. z.-b. Ges. Wien*, xxv. p. 293, pl. ix. fig. 26.

Palpi short, whitish grey; the apical joint exposed, ferruginous: head and thorax rich

tawny red, the thorax tufted behind; antennæ tawny red, pubescent in the male. Fore wings—with the costa arched principally towards the base; the apex not produced; apical margin convex—pale ashy grey irrorated with minute ferruginous red streaks; a basal patch angulated at its outer edge below the costa; a wide costal patch commencing before the middle and extending nearly to the apex, emitting a branch at its outer angle posteriorly, which attains the middle of the apical margin, and a small apical spot, all rich tawny red: a slight ferruginous shade extends below the costal patch. Hind wings greyish fuscous, with paler cilia. 2 ♂, 2 ♀. Expanse of wings 20 millims.

North America: from Mr. Carter's collection. Clemens gives "Virginia" as the habitat of the species.

Exartema griseoalbanum. (Plate LXVIII. fig. 9.)

Palpi erect, white, with the second joint enlarged, sparsely clothed; the apical joint short and naked: head, thorax, and antennæ dull fuscous; the face white. Fore wings rather dirty white, with a dull fuscous spot on the middle of the costa; a larger dull fuscous blotch indented on its outer edge below the middle, covering the base of the wing except along the costa, to which it does not reach; and a medium-sized dull fuscous spot on the dorsal margin before the anal angle; the costa and apical margin are dotted with dull fuscous; a narrow line of the same colour lies at the base of the cilia; and there is a very pale quadrangular olivaceous shade on the dorsal margin between the basal patch and the dorsal spot. Hind wings dull brownish grey. Type ♀. Expanse of wings 14 millims.

A single specimen from the Eastern States of North America, which is unfortunately a female; but the neuration and general character of the insect seem to place it without doubt in the genus *Exartema*. "A true Penthina" Fern.

PÆDISCA, *Led.*

Pædisca culminana. (Plate LXVIII. fig. 10.)

Palpi short; the middle joint stout, thickly clothed; the apical joint exposed: antennæ greyish white: head greyish white. Fore wings—with the costa arched, depressed at the apex; the apical margin straight, not indented, with an appressed costal fold in the male—white, with a very faint rosy tinge and some almost obsolete greyish reticulations; a short basal patch, of which the dark brown outer margin is angulated above the middle; an ill-defined brown triangular spot on the dorsal margin before the anal angle; and a fuscous-brown shade extending from the costa, in the form of half an arrow-head, to a point above the anal angle, separated from the fuscous-brown cilia by only a narrow whitish streak above the middle of the apical margin; there are also some faint brownish abbreviated costal streaks above the projecting angle on the inner edge of the dark shade, which, following the idea of

the arrow head, would represent the point of the barb. Hind wings greyish white, with a grey line along the middle of the paler cilia. 1 ♂. Expanse of wings 16 millims.

Shasta County, California, end of July 1871.

Pædisca illotana. (Plate LXIX. fig. 1.)

Head and palpi ferruginous; the latter short and obtuse, the apical joint not exposed: antennæ fuscous. Fore wings—with appressed fold in the male reaching to the middle of the costa, slightly bent downwards towards the apex—white, streaked and speckled with pale greyish fuscous; an obliquely margined basal patch dark fuscous, streaked transversely with paler greyish-fuscous wavy lines, sometimes with a bluish tinge, and reaching anteriorly beyond the end of the costal fold, posteriorly beyond the first third of the dorsal margin; beyond the basal patch, coming from the costa, are some pale fuscous waved streaks, the last only prolonged and extending along the apical margin; the apex itself fuscous: parallel to the lower portion of the apical margin, but separated from it by a clear space, is a row of three or four black dots above the anal angle; and between these and the basal patch are some pale greyish-fuscous mottlings assuming rather the form of an obsolete median fascia. 2 ♂, 1 ♀. Expanse of wings 16–18 millims.

Rouge River, Oregon, May 1872.

This species is nearly allied to the European *P. tripunctana*, S. V., but differs in the basal patch being less abruptly defined, the anal angle being clear white, not suffused with greyish fuscous as in that species, and in the row of black dots being distinctly detached from the extreme marginal shade. In general appearance also it is smaller and paler.

Pædisca terracoctana. (Plate LXIX. fig. 2.)

Head reddish ochreous, face whiter: palpi whitish ochreous, touched with greyish fuscous at the tips: antennæ simple. Fore wings—the costa slightly arched; apical margin scarcely oblique, slightly concave; costal fold long and narrow, not closely appressed—whitish ochreous, with bright reddish rust-coloured streaks and markings (a curved narrow spot on the dorsal margin before the middle preceded by some streaks of the same colour; an oblique fascia from beyond the middle of the costa to within the anal angle, and some bright streaks from the costa towards the apex); a blotch of sprinkled fuscous scales through the oblique fascia and beyond it above the middle of the wing, and a line of sprinkled fuscous scales along the apical margin at the base of the cilia. Hind wings greyish fuscous. 4 ♂, 3 ♀. Expanse of wings 17 millims.

Occurring in some abundance among Manzanita, *Arctostaphylos glauca* (Lindl.), Mount Shasta, August 1871; also in Mendocino County in June.

Pædisca rectiplicana. (Plate LXIX. fig. 3.)

Palpi short, projecting scarcely the length of the head beyond it, white: head white: antennæ greyish. Fore wings—with the costa slightly arched; apical margin scarcely oblique, convex; the straight costal fold in the male not closely appressed—rather yellowish white, with a patch of greyish-brown and fuscous streaks on the basal portion of the dorsal margin, and beyond it an oblique shade of greyish brown and fuscous extending towards the apex and mixed with some bright steel-blue patches about the ocellated spot above the white anal angle; some abbreviated greyish-brown streaks along the costa, and a chestnut-brown shade at the apex extending along the apical margin, where it is separated from the dark grey cilia by a black line interrupted by a white spot below the apex. Hind wings—female pale brownish, with paler cilia; in the male whitish towards the base. 2 ♂, 1 ♀. Expanse of wings 13 millims.

Mendocino County, California, May 31, 1871; and Siskiyou Mountains, June 1872.

Closely allied to *P. campoliliana*, Tr., but slightly larger; the pale costal half of the wing not interrupted by a conspicuous dark spot about the middle as in that species, but prolonged nearly to the apex, with only a few delicate costal streaks.

Pædisca albangulana. (Plate LXIX. fig. 4.)

Head brownish grey, tufted above: palpi short, the third joint exposed: antennæ fuscous brown: thorax fuscous brown, mottled at the sides. Fore wings—three times as long as wide, a long narrow costal fold in the male extending nearly half the length of the wing, not closely appressed, the costa arched; apical margin slightly concave—whitish much mottled with grey and fuscous brown; a quadrangular fuscous-brown patch on the dorsal margin before the middle, preceded and followed by some wavy greyish-brown lines; some brown spots on the costa beyond the middle, leaving four or five geminated streaks of the pale ground-colour between them; an ill-defined interrupted fuscous-brown oblique fascia from the middle of the costa is widest and most conspicuous towards the dorsal margin; the apex fuscous brown, crossed by two oblique bluish-grey streaks; a bluish-grey ocellated spot enclosing a few blackish-fuscous scales above the anal angle, which is white; a blackish-fuscous line at the base of the cilia. Hind wings pale brown, with paler cilia. 1 ♂, 2 ♀. Expanse of wings 16 millims.

Mendocino County, end of May 1871.

Pædisca? basipunctana. (Plate LXIX. fig. 5.)

Palpi whitish, more than twice the length of the head, projecting upward; the second joint long and thickly clothed; apical joint usually concealed or nearly so: head tufted above; head and thorax whitish: antennæ white, scarcely pubescent in the male. Fore wings—costal

fold in the male not closely appressed, its lower edge nearly straight, not convex; costa much arched; apex produced, nearly falcate, the apical margin deeply impressed below it—sub-ochreous white, rather cream-coloured, sometimes tinged or faintly spotted with greyish; the basal third of the wing with several black spots; some fawn-coloured abbreviated costal streaks, sometimes mixed with fuscous; the ocellated spot almost obsolete, sometimes with one or two black dots within it: cilia whitish, black at the apex. Hind wings rather rosy whitish grey. 2 ♂, 3 ♀. . Expanse of wings 19 millims.

Lower Lake, California, June 22nd, 1871.

This species, with the following one, may perhaps form the type of a new genus. In the almost falcate apex and the greatly rounded costa it would approach the genus *Phoxopteryx*; but the costal fold in the male, if we follow Heinemann's arrangement, must place it, at least provisionally, in the genus *Pædisca.*

Pædisca? subplicana. (Plate LXIX. fig. 6.)

Palpi more than twice as long as the head, fully clothed; the apical joint concealed: head tufted above: these and the antennæ cinereous grey. Fore wings—with the costa much arched or rounded, the apex produced, almost falcate; apical margin deeply impressed below it; costal fold in the male not closely appressed, the inner edge straight, a shining metallic line visible beneath it—mouse-coloured, much irrorated with leaden-grey scales; a very narrow darker fascia extending from the middle of the costa to the anal angle; the ocellated spot almost undistinguishable; some abbreviated leaden-grey costal streaks: cilia grey, darker at the apex, with a pale line along their base. Hind wings greyish cinereous. Abdomen tufted in the male. ♀. The fore wings paler than in the male, being more suffused than irrorated with light leaden grey; the fascia obsolete. 3 ♂, 2 ♀. Expanse of wings 21 millims.

Mendocino County, California, May 1871, and in Oregon.

Pædisca nigralbana. (Plate LXIX. fig. 7.)

Head greyish fuscous in front above, whitish behind; face white: palpi white, touched with greyish fuscous towards the tips; apical joints not exposed: antennæ greyish fuscous. Fore wings more than twice as long as wide, with the costa slightly arched; apical margin slightly sinuated, scarcely oblique: the costal fold in the male long and narrow, not closely appressed, reaching nearly half the length of the wing: the apical half of the wing is divided into three portions—the 1st an oblique ferruginous-brown fascia, widest towards the dorsal margin, and touched with fuscous especially along its edges; the 2nd bluish grey, externally margined with fuscous; the 3rd bright ferruginous, extending to the apex, interrupted by some white geminated streaks from the costa; each pair divided by a slender black line: along the upper portion of the apical margin is a black line at the base of the cilia, which are touched with brown and fuscous; towards the base, on the dorsal half of the wing, are some irregular

blotches of brown and fuscous scales, with some minute spots of the same on the costa or costal fold. Hind wings brownish grey, with paler cilia. 2 ♂, 2 ♀. Expanse of wings 14 millims.

Mendocino County, June 10, 1871.

Allied to *P. campoliliana*, Tr.

Pædisca agricolana. (Plate LXIX. fig. 8.)

Head, palpi, and thorax milk-white; the head tufted above; palpi thickly clothed to the apex: antennæ faintly annulated. Fore wings—more than twice as long as wide—milky white, with ochreous fawn-coloured streaks or reticulations: the appressed costal fold at the base in the male is ochreous fawn-colour; and there are numerous pale streaks of the same colour along the costa, the first acutely angulated beyond the middle and sometimes forming with a straight horizontal line towards the base an arrow-shaped mark; two or three others on the costa towards the apex assuming the form of the Greek γ, the tails pointing outwards towards the very oblique apical margin: in some varieties the markings are so much blended as to be scarcely traceable, giving to the wing a more suffused appearance: the apical margin is narrowly ochreous fawn-colour, with a line of black scales at the base of the cilia, and a few black dots above and within the anal angle: underside brownish fuscous. Hind wings pale brownish grey; cilia milky white. 5 ♂. Expanse of wings 13–20 millims.

May and June, California and Oregon.

Pædisca atomosana. (Plate LXIX. fig. 9.)

Head, thorax, and palpi milky white; antennæ greyish white, pubescent, faintly annulated. Fore wings—more than twice as long as wide; apical margin oblique, slightly sinuated—milky white, closely reticulated with fawn-colour, and irrorated with fuscous scales; the costal fold in the male fawn-colour, sometimes tinged with fuscous; before the apical margin are one or two rather shining irregular lines; the cilia whitish, irrorated with fuscous: underside brownish fuscous, shot with a faint purplish tinge. Abdomen and hind wings brownish grey, the cilia paler. 2 ♂. Expanse of wings 20–23 millims.

San Francisco, May 18th, and Bear Valley, California, June 26th, 1871.

Pædisca bolanderana. (Plate LXIX. fig. 10.)

Palpi depressed, tapering, projecting about the length of the head beyond it; white above, pale brown at the sides: head white; antennæ brownish; thorax white, touched with pale brown in front; patagia pale brown at the base, white at the tips. Fore wings—three times as long as wide, with a somewhat lengthened appressed costal fold—buff-brown with silvery white streaks and spots: a very small spot at the base; a larger spot beyond it touching the dorsal margin near the base, and sometimes joined below the costa to an oblique biangulated

streak nearly reaching the anal angle: two conspicuous spots at the costa—one beyond the middle, the other near the apex, sloping obliquely towards each other, and sometimes meeting so as to leave a buff-brown triangular mark at the costa between them ; a small triangular spot on the middle of the apical margin, and a rather square spot on the dorsal margin before the middle; all slightly margined with some blackish-fuscous scales : cilia whitish, tipped with brown. Hind wings pale greyish brown : cilia paler. 3 ♂, 2 ♀. Expanse of wings 19 millims.

Mount Shasta, California, August 1871.

This species is nearly allied to "*Conchylis*" *agassizii*, Rob. (Trans. Am. Ent. Soc. ii. p. 284), but differs from it in the absence of the costal spot near the base, and of the circular white costal dot beyond the middle, moreover in the white median streak being more abruptly angulated and situated somewhat more towards the costa. The dorsal margin also is not white beyond the middle, as in Robinson's species.

Pædisca crambitana. (Plate LXX. fig. 1.)

♂. Palpi ochreous white above, ochreous at the sides : antennæ ochreous; head ochreous white; both more ochreous in the female : thorax white, with an ochreous streak down the middle; patagia ochreous. Fore wings—more than three times as long as wide; costa slightly arched; apical margin very oblique, dorsal margin subconvex—shining silvery white, with two ochreous streaks, the first slightly arched, running from the base, touching the ochreous costal fold in the male, and ending in the middle of the apical margin, with a branch from above, beyond the cell, to the apex; the second, leaving the base below the cell, is slightly depressed beyond the middle to the anal angle, where it is divided by a slender silvery wedge-shaped streak : the hind margin is narrowly ochreous : cilia white, tipped with ochreous. Hind wings pale straw-colour in the male, cilia white; pale greyish fuscous in the female, cilia greyish white. Expanse of wings ♂ 33 millims., ♀ 26 millims.

Mount Shasta, California, August 1871.

This insect reminds one curiously of a *Crambus*, not only by its long narrow wings, but by the character of its ornamentation much resembling that of many species in the group which includes that genus.

It may perhaps be worthy of remark that whereas Wilkinson and other authors frequently mention the colour of the eyes in their descriptions of new species, we have in this species a proof that such observations are of little or no value; for in the female specimen described above the eyes are pale ochreous grey, whereas in the male they are black ; moreover I have in my own collection another female of the same species, of which the eyes are black, showing that in this case at least it is a mere variation, and not even a sexual distinction.

Pædisca larana. (Plate LXX. fig. 2.)

Head, palpi, antennæ, and thorax chalky white. Fore wing—with the costal fold in the male closely appressed—chalky white, very sparsely irrorated with minute black scales; the

costa straight; apical margin slightly oblique and concave: some very faint ochreous blotches, one near the base of the dorsal margin, others towards the middle of the wing, and some very faint ochreous streaks along the costa: above the anal angle are a few black dots: cilia white, irrorated with minute black scales. Hind wings pale greyish white; cilia white. 2 ♂, 1 ♀. Expanse of wings 22 millims.

Siskiyou County, California, September 3rd, 1871.

Pædisca luridana. (Plate LXX. fig. 3.)

Antennæ slightly annulated; head, palpi, thorax, and fore wings almost ochreous whitish; the fore wings nearly three times as long as wide, the apical margin very oblique, convex, faintly blotched or partly suffused with very pale fawn-colour, sometimes with a few black scales above the anal angle: an appressed costal fold in the male; the costa scarcely arched; apical margin oblique, not concave: cilia sometimes slightly irrorated with fuscous. Hind wings pale greyish straw-colour. 2 ♂. Expanse of wings 19 millims.

North California, September 7th, 1871.

Pædisca argentialbana. (Plate LXX. fig. 4.)

Palpi short, thickly clothed; the apical joint not exposed; white: head and thorax white; antennæ whitish. Fore wings—with an appressed costal fold in the male; the costa slightly arched; apical margin oblique, not indented—silvery white, faintly irrorated with scattered greyish-fuscous scales: some faint oblique greyish-fuscous costal streaks; and a faint reduplicated dash of the same colour from the apical margin below the apex, continued to a point along the upper edge of the cell: the ocellated spot contains on its inner side one and on its outer side two small sublustrous silvery patches: the cilia white, irrorated with greyish fuscous. Hind wings very pale grey, with a faint yellowish tinge along their margin within the white cilia. Expanse of wings ♂ 15 millims., ♀ 13 millims.

Texas.

This species differs from *Pædisca agricolana* chiefly in the purer white of the fore wings, in the much smaller size, and in the more shining ocellated spot.

Pædisca resumptana. (Plate LXX. fig. 5.)

Penthina resumptana, *Walk. Cat. Lep. Het.* xxviii. p. 376.

Head cinereous: antennæ greyish fuscous, scarcely pubescent. Fore wings—with a rather long appressed costal fold in the male—greyish white, shaded and mottled with ashy grey, especially towards the apex, with several abbreviated oblique tawny costal streaks; an ill-defined outwardly angulated tawny-speckled basal patch, more conspicuous towards the dorsal

margin; a subobsolete tawny-speckled central fascia, with some fuscous scales posteriorly before the anal angle, followed by an indistinct ocellated spot containing two black streaks, with a patch of mixed ashy grey and tawny shading above it: cilia greyish, tipped with fuscous, with a pale tawny line along their base. Hind wings dingy greyish. Type ♂. Expanse of wings 14 millims.

Nova Scotia. From Lieut. Redman's collection.

Pædisca pulveratana. (Plate LXX. fig. 6.)

Head, palpi, and antennæ dusty whitish grey; thorax grey. Fore wings—three times as long as wide; the costa scarcely arched—whitish grey, much irrorated with pale brownish fuscous, with two brownish-fuscous pale-margined half-fasciæ sloping obliquely outwards from the dorsal margin; some minute brownish-fuscous spots or streaks along the costa; and before the apex a fuscous shade, through which are some rather shining greyish lines margined with brownish fuscous, running towards the dorsal margin; a streak or spot of shining grey at the anal angle. Hind wings brownish grey; cilia paler. 4 ♂. Expanse of wings 15–19 millims.

San Francisco, May 16th, 1871. I have also received it from Texas.

Pædisca primulana. (Plate LXX. fig. 7.)

Palpi slightly drooping, tapering, and clothed to their points, together with the head, thorax, and antennæ pale primrose, the latter faintly annulated and pubescent in the male. Fore wings—more than twice as long as wide; the costa arched; apical margin very oblique, convex; a small inconspicuous costal fold in the male closely appressed—pale primrose watered as it were with rather shining pearly-white streaks, which sometimes enclose an oblique olivaceous streak from beyond the middle of the costa to a point above the anal angle, and an elongated olivaceous spot below the costa before the apex. Hind wings and abdomen grey, with paler cilia. Female smaller than the male; fore wings slightly narrower and more acute. 6 ♂, 1 ♀. Expanse of wings 17–20 millims

Mendocino County, June 10th, 1871.

Pædisca biquadrana. (Plate LXX. fig. 8.)

Head, palpi, and antennæ greyish brown; palpi obtuse, slightly depressed, extending more than the length of the head beyond it; thickly clothed to the apex: antennæ of the male having a serrated appearance. Anterior wings—with a short appressed costal fold near the base in the male; the costa slightly arched; hind margin oblique—whitish much streaked with wavy brown and fuscous lines; a pale fuscous shade runs along the upper edge of the cell; some fuscous scales at the apical margin and at the apex, within which is a small ferruginous-brown triangle, crossed by several slender blackish-fuscous lines; four or five

small triangular fuscous streaks along the costa, alternated with narrow blackish-fuscous lines; two ferruginous patches on the dorsal margin—the first before the middle, the second wider beyond the middle, both margined and streaked with fuscous, enclosing and defining with the fuscous shade above them a square patch of the pale ground-colour, which also appears conspicuously within the anal angle; a curved ferruginous streak from below the apical triangle to the apical margin above the anal angle: cilia whitish, tinged with brown. Hind wings and abdomen brown, with a slightly fuscous tinge along the margin. 2 ♂. Expanse of wings 22 millims.

Pitt River, Shasta County, California, end of July 1871.

Pædisca shastana. (Plate LXX. fig. 9.)

Palpi tapering to a blunt point, whitish ochreous, the sides and apex somewhat fuscous; antennæ pale, slightly pubescent in the male; head whitish ochreous above and in front, with a tuft of ferruginous scales above each eye; thorax brownish in front, above and behind whitish, irrorated with brown scales. Fore wings—three times as long as wide, costa straight; a short appressed costal fold near the base; hind margin oblique; dorsal margin slightly rounded—yellowish white, much blotched and streaked with brown and fuscous; the costa shaded with brownish fuscous to the middle, beyond it with three brownish-fuscous spots alternating with four slender, short, brownish-fuscous lines on the pale ground-colour; on the dorsal margin are two irregular ferruginous-brown blotches much tinged with blackish fuscous, and enclosing a wide oblique half-fascia of the pale ground-colour, which also appears conspicuously above and within the anal angle; an irregular triangular blotch of ferruginous brown mixed with blackish fuscous lies before the dorsal margin, which it touches at the apex and above the anal angle. Abdomen and hind wings pale brown: cilia brownish white. 1 ♂, 1 ♀. Expanse of wings 27 millims.

Mount Shasta, California, August 1871.

Pædisca cataclystiana. (Plate LXX. fig. 10.)

Pædisca cataclystiana, *Walk. Cat. Lep. Het.* xxviii. p. 378.
Steganoptycha ? ochreana, *Clem. Proc. Ent. Soc. Phil.* iii. p. 520.

Palpi ochreous, short, obtuse, projecting but little beyond the head, apical joint not exposed; head, thorax, and antennæ ochreous. Fore wings—three times as long as wide, the costa slightly arched; apex produced, acute; apical margin oblique, indented below the apex, with an appressed costal fold at the base in the male—ochreous; an indistinct brownish-ochreous shade along the middle of the wing from the base to near the upper edge of the ocellated spot is accompanied by some faint longitudinal streaky lines on either side of it; some minute brownish abbreviated streaks along the costa, alternating beyond the middle with shining metallic silvery-white oblique streaks, of which the first is produced outwards

towards the ocellated spot; the third and fifth from the apex, converging below the fourth; and the extreme apical one pointing inwards, and forming with the one next to it a hollow triangle; the ocellated spot is margined on both sides with shining metallic silvery white, most conspicuously on its inner side; a streak of the same runs across the middle, dividing a black spot below from a slender black line above it: the cilia are ochreous, profusely irrorated with fuscous scales except at the points; and there is a patch of similar scales above the ocellated spot. Hind wings yellowish grey, slightly dotted with darker grey towards the apex. In the male of this species the fore wings are slightly wider, the apex less acutely produced. Type ♀. Expanse of wings 18–19 millims.

North America. From Mr. Carter's collection. I have also met with this species in some abundance in California.

Pædisca bipunctella. (Plate LXXI. fig. 1.)

Affa bipunctella, *Walk. Cat. Lep. Het.* xxvii. p. 202.
Pædisca worthingtoniana, *Fernald, Can. Ent.* x. p. 83.

Palpi projecting more than the length of the head beyond it; the second joint freely clothed, increasing in size towards the apex; apical joint tapering, exposed; pale yellowish, touched with brown towards the base: head and thorax pale yellow; antennæ brownish. Fore wings—rather less than three times as long as wide, with the costa nearly straight, only slightly raised in the middle; a costal fold in the male, not closely appressed, reaching nearly to the middle, with a tuft of long hairs arising from its base, usually concealed beneath it, but apparently capable of elevation; the apex subacute; apical margin oblique, scarcely convex—pale straw-yellow, with a small brownish spot at the end of the cell, diffused into a faint longitudinal ferruginous shade before and beyond it. Hind wings brownish grey; cilia paler. Underside of the fore wings shaded with fuscous. The first pair of tarsi brownish, the others with the abdomen and anal tuft whitish grey; the thorax and abdomen unusually stout. The proboscis is not "obsolete," as stated by Walker in creating the genus *Affa* for the reception of this specimen. Type ♂. Expanse of wings 40 millims., from palpi to anal tuft inclusive 18 millims.

Fernald gives North Illinois as the habitat of this species.

Pædisca grandiflavana. (Plate LXXI. fig. 2.)

Head, palpi, antennæ, and thorax pale yellow; palpi more than twice the length of the head. Fore wings—little more than twice as long as wide, the costa evenly arched, apical margin rather oblique; male with an appressed subconvex costal fold at the base—yellow, with numerous olivaceous fuscous spots mixed with shining metallic ochreous scales; these spots seem to follow no fixed method of arrangement, but are somewhat grouped before the middle of the wing below the cell, and have perhaps a tendency to run in lines sloping obliquely outwards from beyond the middle of the costa, and bending parallel with the apical

margin on reaching the upper edge of the cell: the cilia are thickly irrorated with olivaceous fuscous: underside pale straw-colour, shaded and dotted with brownish fuscous. Abdomen and hind wings pale straw-colour delicately suffused with a fuscous tinge, except some pale blotches along the margin; cilia paler. 1 ♂, 2 ♀. Expanse of wings 30–34 millims.

Lake County, California, June 17th–19th, 1871.

Pædisca subflavana. (Plate LXXI. fig. 3.)

Head tufted in front, with palpi and antennæ (which are pubescent in the male) pale ochreous fawn-colour; the palpi thickly clothed, projecting about twice the length of the head beyond it. Fore wings scarcely more than twice as long as wide—male with appressed costal fold near the base; apical margin oblique, dorsal margin slightly convex towards the base—pale ochreous fawn-colour, in the male much irrorated with sublustrous yellowish scales, especially towards the apical margin, with an ill-defined, almost obsolete fascia running from the middle of the costa towards the anal angle, and extending upwards parallel with the apical margin; above the anal angle are one or two single black scales; the costa is faintly dotted with brownish ochreous, the cilia slightly touched with fuscous in the male. Hind wings shining straw-colour, with a brownish-fuscous tinge in the male. 2 ♂, 1 ♀. Expanse of wings 27–31 millims.

Rouge River, Oregon, end of May, 1872.

Pædisca maculatana. (Plate LXXI. fig. 4.)

Palpi projecting more than twice the length of the head beyond it, widely clothed and rounded at the apex; pale fawn-colour, somewhat tinged with fuscous at the sides in the male: head, thorax, and antennæ pale fawn-colour. Fore wings—about twice as long as wide, the costa slightly arched, with appressed costal fold near the base in the male—very pale fawn-colour, streaked or reticulated with wavy lines of a slightly darker shade, with a conspicuous buff-brown spot, elongated obliquely outwards at the middle of the dorsal margin, which it scarcely touches; some lustrous streaks from the costa before the apex, the outer one or two bending parallel to the apical margin; an almost obsolete half-fascia sloping from the middle of the costa towards the apical margin, more conspicuous in the female than in the male. Hind wings pale fuscous brown, slightly darker in the female; cilia paler. 3 ♂, 3 ♀. Expanse of wings ♂ 23 millims., ♀ 21 millims.

Lake County, California, June 17th–19th, 1871.

Pædisca irroratana. (Plate LXXI. fig. 5.)

Head and thorax fawn-colour; palpi and antennæ fawn-colour with a slight fuscous tinge, especially beneath: palpi more than twice as long as the head, thickly clothed. Fore wings—more than twice as long as wide, with the costa evenly arched, apical margin oblique;

a subconvex appressed costal fold near the base—fawn-coloured, profusely irrorated with greyish shining scales assuming the form of wavy lines, one of which runs parallel with and near to the apical margin; the cilia fawn-colour: underside of fore wing much shaded with pale brownish fuscous. Abdomen and hind wings pale greyish fuscous, the latter above sometimes shaded along the margin, with paler cilia, beneath greyish white, reticulated with brownish fuscous along the costal margin. 5 ♂. Expanse of wings 28 millims.

Mendocino County, June 7th–10th, 1871.

Pædisca perdricana. (Plate LXXI. fig. 6.)

Head, palpi, and thorax pale fawn-colour; antennæ the same, pubescent. Fore wings—with the appressed costal fold near the base irrorated with fuscous—very pale fawn-colour, irrorated with numerous brown and fuscous scales, which have a tendency to run in wavy lines, first sloping obliquely outward from the costa, then turning parallel to the apical margin; there are a few single black scales above the anal angle. Hind wings pale fuscous brown, with paler cilia. 2 ♂. Expanse of wings 19 millims.

Burney Falls, Shasta County, July 20th, 1871.

Nearly allied to *P. irroratana*, but a much smaller species, and without the lustrous scales which distinguish it, otherwise greatly resembling it in general appearance. The distinction between the two species appears to be that in *P. irroratana* the ground-colour of the wing is dark with paler markings, whereas in *P. perdricana* the ground-colour is pale and the markings are darker.

Pædisca passerana. (Plate LXXI. fig. 7.)

Head cinereous brown above, face ochreous white; palpi cinereous, thickly clothed, especially beneath, apical joint not exposed; antennæ greyish fuscous; the patagia dusty whitish. Fore wings—costa slightly arched, apical margin oblique—greyish white, streaked, shaded, and blotched with dull brown; a brown half-fascia from the dorsal margin near the base, another usually wider from the dorsal margin beyond the middle; a dull brown shade along the costa and at the apex, in which are several geminated costal streaks of the pale ground-colour; a pale greyish rather shining spot above the anal angle, divided by an irregular brown streak. Hind wings brown, with paler cilia. 4 ♂. Expanse of wings 15 millims.

Mendocino County, California, June 9th & 10th, 1871.

Pædisca glomerana. (Plate LXXI. fig. 8.)

Palpi extending more than the length of the head beyond it; the second joint clothed with long scales; the apical joint freely exposed; together with the head dull greyish white, irrorated with fawn-colour: antennæ slightly pubescent. Fore wings—two and a half times as long as wide, the costa scarcely arched, with appressed costal fold in the male; the apical

margin oblique, slightly convex—dull fawn-brown, streaked along the costa and irrorated over their surface with pale cinereous grey, with some shining silvery metallic dots before the ocellated spot; the ocellated spot contains four transverse rows, each of six or seven black dots, except the lowest, which consists only of three or four and somewhat diverges from the others, pointing downwards towards the anal angle: on the margin and in the middle of this group of black dots are some shining silvery metallic spots. Hind wings pale brownish fawn-colour, with paler cilia: the underside unicolorous. 1 ♂. Expanse of wings 25 millims.

Texas.

Pædisca fulminana. (Plate LXXI. fig. 9.)

Palpi reddish brown; the apical joint darker, almost fuscous, exposed. Fore wings rich fawn-brown, with appressed costal fold in the male: the costa slightly arched, with a series of fourteen or fifteen oblique shining white costal streaks arranged in pairs; the first and sixth, counting from the apex, are prolonged to the apical margin: the subobsolete ocellated patch is bounded on its outer and upper edge by a slender shining white angulated streak, and by another on its inner margin; the remaining surface of the wing irrorated with dull whitish dots: cilia greyish fawn-colour, irrorated with fuscous. Hind wings fawn-brown, with slightly paler cilia. The abbreviated costal streaks are very visible on the underside of the fore wings; and the underside of the hind wings is profusely speckled, giving them a reticulated appearance. 2 ♂. Expanse of wings 22 millims.

Texas.

Pædisca canana. (Plate LXXI. fig. 10.)

Head and thorax grizzled or brownish white: palpi the same, short, obtuse, thickly clothed; the apical joint depressed, almost concealed, fuscous. Fore wings—with an appressed costal fold at the base; the costa scarcely arched; apical margin slightly oblique, almost unimpressed—white or dingy white, sometimes striated with wavy greyish-fuscous or brownish lines, and mottled with the same colour about the apex and apical margin, with two conspicuous dorsal patches brown or greyish fuscous, one before and one beyond the middle, shaded also along the costa with the same colour, which is penetrated by numerous oblique whitish costal geminations. Hind wings greyish or brownish fuscous, with paler cilia. 4 ♂, 1 ♀. Expanse of wings 19 millims.

Mendocino and Lake Counties, California, May and June 1871.

In general appearance very like *Steganoptycha lagopana* (see page 71).

Pædisca hirsutana. (Plate LXXII. fig. 1.)

Palpi roughly clothed with long scales projecting far beyond the obtuse apical joint, cinereous brown, whitish grey below and sometimes at the points; head tufted above, brown.

Fore wings cinereous brown, somewhat mottled with whitish and fuscous scales, ferruginous towards the apex : the costa rather arched, with an appressed fold in the male near the base; apical margin slightly indented, scarcely oblique; a rather square white spot on the middle of the dorsal margin, interrupted by a few brownish scales, in the female with a white streak joining it obliquely from the costa: some whitish abbreviated streaks from the costa beyond the middle, with two steel-blue wavy streaks meeting at the anal angle and enclosing three black lines in the ferruginous ocellated spot. Hind wings fuscous brown. Legs cinereous brown, spotted with whitish. 4 ♂. Expanse of wings 13 millims.

Sonoma County, California, May 23rd, 1871; and on Rouge River, Oregon, May 7th, 1872.

This species is nearly allied to *P. trigeminana*, Steph. (Staud. and Wocke, 1101), but is slightly smaller, the fore wings shorter in proportion to their breadth, the dorsal spot whiter, the ocellated patch less distinctly visible, the hind wings darker, and the palpi rather longer and more conspicuous. I am informed by Prof. Zeller that he has a specimen of the true *P. trigeminana* from California; and Prof. Fernald has also a specimen from the same locality which approaches even more nearly to it than my *P. hirsutana*. I have two specimens in my own collection, taken in California, which I believe to be *P. trigeminana*; but I had long since made a note of their distinctness from the species above described, which appears to be very constant in its characters.

Since writing the above, Prof. Zeller has most generously presented to me the specimen above referred to, which exactly resembles in colour and shape one of my supposed *P. trigeminana* from California. It is, however, much larger. I am by no means convinced that it is not another good and distinct species. In any case it seems distinct from *P. hirsutana*.

Pædisca improbana. (Plate LXXII. fig. 2.)

Sciaphila improbana, *Walker, Cat. Lep. Het.* xxviii. p. 337.
Pædisca diffinana, *Walker, Cat. Lep. Het.* xxviii. p. 378.

Palpi projecting about the length of the head beyond it; the second joint clothed, obtuse; apical joint conical and exposed. Fore wings—three times as long as wide, with the costa scarcely arched; the apical margin oblique; apex slightly rounded—dark ashy brown, inclining to fuscous, with a slight purplish gloss and some abbreviated brownish-fuscous costal streaks and indistinct transverse strigæ. There is a brownish-fuscous rather mottled basal patch clearly defined at its outer edge, where it forms a bold subacute angle on the middle of the cell, nearly reaching an excrescence projecting from the inner edge of an indistinct oblique fascia of the same colour, which runs from the middle of the costa to the anal angle; two small brownish-fuscous spots are situated about the middle of the dorsal margin. Hind wings pale brownish: cilia cinereous whitish, with a slender dark line near their base. Type ♀, not ♂ as stated by Walker. Expanse of wings 18 millims.

St. Martin's Falls, Albany River, Hudson's Bay. Presented by Dr. Barnston.

Pædisca transmissana. (Plate LXXII. fig. 3.)

Penthina transmissana, *Walker*, *Cat. Lep. Het.* xxviii. p. 375.

Palpi projecting about the length of the head beyond it; together with the head and antennæ greyish fuscous; the apical joint scarcely exposed, paler. Fore wings—with the costa arched; an appressed costal fold at the base in the male; apical margin oblique, slightly concave—dull purplish brown at the base, where there is a wide rather mottled basal patch distinctly defined and slightly angulated at its outer edge above the middle; beyond this is a whitish dorsal patch, diffused upwards at its inner edge towards the costa, and outwards along the dorsal margin, but not reaching the anal angle; beyond the dorsal patch the wing is shaded off from reddish brown to ferruginous; towards the apex are four pairs of abbreviated shining yellowish-white costal streaks, with slightly darker shades between each pair, emitting slender streaks towards the apical margin; the ocellated spot is margined on both sides with shining whitish, and contains two or three black streaks; a dark fuscous line runs parallel to the apical margin near the base of the whitish cilia, which are also tipped with brownish fuscous. Hind wings pale cinereous. Type ♂. Expanse of wings 15 millims.

Nova Scotia. From Lieut. Redman's collection.

Pædisca strenuana. (Plate LXXII. fig. 4.)

Grapholita strenuana, *Walk. Cat. Lep. Het.* xxviii. p. 383.
Grapholita exvagana, *Walk. Cat. Lep. Het.* xxviii. p. 383.

Palpi dull cinereous, scarcely projecting beyond the head, obtuse; the apical joint very short: head dull brown, irrorated with cinereous; the face paler: antennæ brownish. Fore wings—with the costa slightly arched, an appressed costal fold in the male, the apex produced; apical margin much indented, slightly oblique—having a wide basal patch brownish fuscous, profusely irrorated with minute cinereous scales, obtusely angulated at its outer edge above the middle, and extended narrowly along the costa; followed by a pale whitish ochreous wide dorsal patch, diffused indistinctly upwards towards the costa, and blended outwardly with the dull brownish-fuscous apical half of the wing, which is also minutely irrorated with cinereous: a very pale whitish ochreous ocellated spot above the anal angle is margined with shining silvery, preceded by a few black scales, and contains a black streak near its upper edge, and a brownish-fuscous spot or streak below it: some very oblique sublustrous costal streaks, alternating with fuscous scales, converge towards the middle of the apical margin: cilia irrorated with brownish fuscous. Type ♂. Expanse of wings 15 millims.

North America. From Mr. Carter's collection.

This is one of those remarkable instances in which Mr. Walker has described two obviously similar specimens from the same collection under different new specific names, without reference or comparison, and has published the descriptions on the same page of his catalogue.

Pædisca radicana. (Plate LXXII. fig. 5.)

Head, palpi, and thorax brownish fuseous, palpi extending scarcely more than the length of the head beyond it, thickly clothed; apieal joint not exposed: antennæ brownish. Fore wings—rather more than twice as long as wide; the costa arehed; apieal margin oblique, slightly convex; the costal fold in the male closely appressed—the ground-colour ereamy white, mueh mottled and suffused with grey; a greyish basal patch covering about one third of the wing, including on its outer edge a brownish-fuscous band, which becomes obsolete towards the eosta; about the middle is a ferruginous-brown fascia, angulated on its outer edge below the costa, dotted with fuseous, and crossed by a fuscous line below the middle; the apieal portion of the wing is also ferruginous brown to a point above the anal angle, and is internally mottled with fuscous; a small fuscous wedge in the pale ground-colour before the middle of the dorsal margin: cilia dull grey. Hind wings fuscous brown. Legs fuscous, spotted with ochreous. Underside of fore wings brownish fuscous; the costa spotted with ochreous; underside of hind wings yellowish white, spotted with pale fuscous. Expanse of wings ♂ 15 millims., ♀ 13 millims.

Rouge River, Oregon, May 1871.

Pædisca abruptana. (Plate LXXII. fig. 6.)

Head brownish ochreous, thickly tufted above; the palpi ochreous, tipped with fuseous, short and obtuse; the fuscous apical joint searcely exposed; antennæ oehreous. Fore wings—with the eosta arched, an appressed eostal fold at the base—much mottled with various shades of ochreous brown and fuscous; a patch of fuscous seales about the middle of the wing on the basal third; some oblique slender geminated whitish costal streaks, those nearest to the apex forming a triangular spot; below this, arising in the apical margin, is an elongated whitish spot, joined to the third pair of costal geminations by a slender grey and fuscous line; the ocellated spot is subochreous white, with shining scalcs on its inner and upper external edge, and a minute fuscous spot at its upper extremity: cilia whitish, irrorated with fuseous. Hind wings and cilia dull brown. 3 ♂. Expanse of wings 15 millims.

Texas.

I have little doubt that this is the species referred to by the late Dr. B. Clemens in the 'Proeeedings of the Entomological Society of Philadelphia,' vol. v., where, after deseribing his *Steganoptycha flavocellana* from a specimen in his own collection, he mentions that there are other specimens from Virginia, in the collection of the Entomological Society of Philadelphia, of which the general hue is paler, and which are not more than half the size of the specimen chosen as his type. I have myself seen in that collection specimens of the speeies now under description labelled *Steganoptycha flavocellana*, Clem.; but I am assured by Prof. Fernald, who has seen Dr. Clemens's type, that the present species is quite distinct from it.

The absence of a black central dash, and of one on the eostal edge of the occlloid spot, are among the most noticeable points of divergence from Dr. Clemens's description, in which, unfortunately, the dimensions and the presenee or absence of a eostal fold are not referred to.

Pædisca graduatana. (Plate LXXII. fig. 7.)

Palpi short, depressed and obtuse, greyish: head grey, paler in front: thorax and patagia grey: antennæ greyish. Fore wings—nearly three times as long as wide, the costa (with an appressed fold in the male) straight; apical margin slightly convex; dorsal margin bulged towards the base—rather speckled grey, with a triangular dorsal spot, of which the obtuse apex does not reach the costa; a fascia beyond the middle narrowly separated from the costa, posteriorly diminishing in width to the dorsal margin, and an apical blotch reaching nearly to the anal angle brownish fuscous, narrowly margined at the sides with greyish-white lines, leaving the grey ground-colour of the wing appearing as a basal patch; a central fascia widest on the dorsal margin, and an evenly narrow fascia from the anal angle; all connected along the costa. Hind wings and cilia brown. 1 ♂. Expanse of wings 17 millims.

Texas.

Pædisca palpana. (Plate LXXII. fig. 8.)

Palpi cinereous grey, roughly and widely clothed with long hairs projecting twice the length of the head beyond it: head tufted in front, slightly paler than the palpi: antennæ cinereous. Fore wings—with a small appressed costal fold; costa slightly arched; apical margin oblique, rather concave—cinereous whitish, streaked and mottled with olivaceous brown, with some few fuscous scales, especially towards the base, and a triangular spot on the dorsal margin beyond the middle: the pale ocellated spot contains the usual three black streaks or spots; some white oblique geminated costal streaks tending towards the apical margin. Hind wings brownish fuscous. 5 ♂, 1 ♀. Expanse of wings 14 millims.

Mount Shasta, California, August 1871.

Pædisca abbreviatana. (Plate LXXII. fig. 9.)

The head and the palpi, which project scarcely more than its length beyond it, cinereous grey. The fore wings—rather more than twice as long as wide, with the costa scarcely arched; the apical margin oblique, not impressed, and an appressed costal fold in the male—whitish grey, shaded and blotched with greyish fuscous, sometimes with a ferruginous tinge over the apical portion of the wing: at the outer edge of the greyish-fuscous basal patch is a brownish-fuscous abbreviated dorsal fascia; beyond it, running from the costa obliquely towards the anal angle, is an irregular ill-defined and sometimes interrupted fascia of the same colour: some short brownish-fuscous costal streaks blend with a rather ferruginous-brown shade which covers the apical portion of the wing: the ocellated patch is margined externally with rather shining grey, and contains a black spot on its inner, and three black

streaks on its outer side : cilia greyish, touched with fuscous. Hind wings pale brown, with greyish cilia. 2 ♂. Expanse of wings 11 millims.

At the beginning of August 1872, Washington.

Pædisca solicitana. (Plate LXXII. fig. 10.)

Grapholita solicitana, *Walk. Cat. Lep. Het.* xxviii. p. 387.
Halonota ? packardiana, *Clem. Proc. Ent. Soc. Phil.* ii. p. 417.

Palpi projecting about half the length of the head beyond it, whitish grey; the apex of the second joint much dilated; the apical joint not exposed: head and antennæ whitish grey. Fore wings—with an appressed costal fold at the base in the male; the costa slightly arched; apical margin indented, slightly oblique—whitish grey, transversely streaked and mottled with ferruginous over the apical half of the wing; some slender brownish costal streaklets divide the pale ground-colour into five oblique geminated streaks, which, partially blending, acquire a bluish metallic lustre posteriorly, and are continued in angulated lines across the wing : the basal patch is brownish, irrorated with fuscous scales, occupying fully one third of the dorsal margin; its outer edge leaving the dorsal margin at first straight, but quickly becoming oblique, is strongly angulated about the middle: two shining metallic steel-blue patches, each preceded by some short black dashes, form the ocellated spot above the anal angle: cilia greyish white, tipped with black and having a very distinct black line along their base. Hind wings pale brownish grey, with a distinct line of the same colour running within the paler cilia. Type ♀.

Nova Scotia. From Lieutenant Redman's colleetion.

There is also in the Museum a male, which I received from Professor Fernald.

Walker describes the following additional species under the generic name *Pædisca* :—

Pædisca inquietana, Walk. : see *Sericoris inquietana*, p. 35.
—— *diffinana*, Walk., = *Pædisca improbana*, p. 51.
—— *albicepsana*, Walk., = "*Anchylopera*" *striatana*, Clem.
—— *procellariana*, one of the Pyralidæ.

SEMASIA, *H.-S.*

Semasia radiatana. (Plate LXXIII. fig. 1.)

Palpi tinged with brownish fuscous externally, paler on the inner side, projecting fully the length of the head beyond it; the second joint much thickened anteriorly, the apical joint not exposed: head pale fawn-colour; antennæ brownish: thorax pale fawn, tinged with brownish at the sides. Fore wings—with the costa slightly arched, the apex acute, apical margin

oblique, scarcely concave—whitish fawn-colour, longitudinally streaked with darker shades: from the base are two brownish shades, one above and one below the middle, the latter the most conspicuous, blending with some streaks of the same colour, which are continued along the cell, terminating in a brownish-fuscous spot at its lower extremity: from the apical margin pointing inwards are six narrow brown wedge-shaped dashes following the veins to the end of the cell, interrupted by two pale elongated spots, one before the apex, the other below the middle: the anal angle shaded with brown: cilia irrorated with brownish fuscous, with a slender whitish line along their base. Hind wings brownish, with paler cilia. Type ♂. Expanse of wings 24 millims.

From the Eastern States of North America.

Semasia? elongana. (Plate LXXIII. fig. 2.)

Palpi stone-grey, very long, projecting more than three times the length of the head beyond it; the second joint thickened in the middle, clothed with long hair-like scales, enveloping and concealing the short slender apical joint: antennæ stone-grey, pubescent in the male. Fore wings—about three times as long as wide, with the costa straight, slightly depressed towards the apex; apex produced; apical margin very oblique, not indented—whitish stone-grey, mixed with dull ochreous and fuscous scales: on the dorsal half of the basal portion of the wing is an inconspicuous oblique ochreous shade mixed with fuscous; from the middle of the costa is a very faint indication of an abbreviated oblique fascia; towards the apex are some inconspicuous whitish costal streaks, blending towards the sub-lustrous white outer margin of the ocellated spot, which contains two black streaks: the apical margin is tinged with ochreous; the cilia irregularly tinged with purplish fuscous, a slender pale line along their base. Hind wings ample, pale brownish grey: cilia as on the fore wings; vein 4 absent. 2 ♂. Expanse of wings 25 millims.

Northern Oregon, middle of April 1872.

This is one of several species in which vein 4 of the hind wings appears to be obsolete. They agree in neuration with *pupillana*, Linn., and *wimmerana*, Tr., placed in the genus *Semasia* by Heinemann, but scarcely with the distinguishing characters of the neuration of the genus as stated by that author in his synopsis (Schmett. p. 100), viz. "Ast 3. und 4. der Hinterflügel auf gemeinschaftlichem Stiele;" and again, in the same volume (Tabelle der Gattungen, p. 2), " Der Mittelast der Hinterflügel gegen seinen Ursprung deutlich gebogen und convergirt daselbst mit Ast 4." In the length of the palpi and in the form of the fore wings it is also somewhat peculiar. I have placed it with some hesitation in this genus, at least provisionally.

Semasia artemisiana. (Plate LXXIII. fig. 3.)

Head white, tufted in front, with a slight ochreous tinge above, the palpi projecting more

than its length beyond it : antennæ with the basal joint thickened. Fore wings milk-white; the cilia bright chestnut-brown, with an inconspicuous oblique pale olive-grey fascia from near the base to the middle of the dorsal margin; another of the same colour from the middle of the costa, joining a bright chestnut-brown streak which divides the subobsolete ocellated spot above the anal angle; this streak contains two or three black scales and some few sublustrous silvery-white ones: underside glossy pale chestnut, the costa narrowly white. The hind wings pale grey, faintly shaded with chestnut, especially along the margins; vein 4 of the hind wings is absent. Type ♂. Expanse of wings 22 millims.

A single larva, found July 29th, 1871, near Mount Shasta, California, drawing together the leaves of leading shoots of a species of *Artemisia*, produced a male in the following month. The species is allied to the European *S. pupillana*, L.

Semasia scalana. (Plate LXXIII. fig. 4.)

Head cinereous grey; palpi cinereous grey above, white at the base beneath, thickly clothed, extending nearly twice the length of the head beyond it: antennæ fuscous above, paler beneath. Fore wings—oblong, three times as long as wide, the costa arched towards the base; apical margin oblique, not perceptibly indented—reddish chocolate-brown; a few scattered whitish scales at the base; an oblique white, rather shining fascia from before the middle of the costa to beyond the middle of the dorsal margin, divided by a narrow pale yellowish-buff line; some shining silvery streaks from the costa beyond the middle, divided by pale yellowish fawn-colour, and extending to the ocellated spot, which is irrorated with fuscous in its upper half, and contains in its lower half a patch of twelve (somctimes sixteen) square black dots, divided into two groups of six or cight each by a lustrous steel-blue streak, and margined on both sides by lustrous steel-blue: cilia whitish, irrorated with fuscous. Hind wings brownish grey; vein 4 absent. 4 ♂. Expanse of wings 16 millims.

June 1872, on the borders of California and Oregon.

Semasia columbiana. (Plate LXXIII. fig. 5.)

Head, thorax, and palpi speckled grey, the latter paler beneath, projecting about the length of the head beyond it: antennæ simple. Fore wings whitish, thickly irrorated with greyish fuscous; in the male three times as long as wide; costa very slightly bulged near the base; apical margin scarcely sinuated; dorsal margin convex towards the base; a basal patch, occupying the first third of the wing, sometimes greyish fuscous, sometimes buff-brown, and sometimes pale brownish buff, margined with fuscous; an oblique fascia of a corresponding colour, sinuated on its inner edge, near the dorsal margin, sometimes with a branch towards the costa before the apex; a few sublustrous whitish streaks in the apical portion of the wing,

and a pale ocellated spot above the anal angle, including two black spots, externally margined by bluish lustrous scales. Hind wings whitish grey, with a faint tinge of reddish brown towards the margins; vein 4 absent. 3 ♂, 1 ♀. Expanse of wings 13–16 millims.

April 17th, 1872, North Oregon, near the Columbia River.

Semasia decempunctana. (Plate LXXIII. fig. 6.)

Head, palpi, and antennæ grey; palpi short, well clothed, the apical joint not exposed; patagia brownish buff. Fore wings—with the costa scarcely arched; apical margin very oblique, not concave; dorsal margin rounded near the base—greyish white, a rusty buff-coloured shade at the base, blending into the pale ground-colour beyond; the first third of the wing with a wedge-shaped projection on its outer edge, reaching nearly to the middle; an indistinct narrow oblique buff-brown fascia beyond the middle, some white-margined buff spots on the costa beyond it, and a buff line, internally white-margined, along the upper half of the apical margin; an ocellated spot above the anal angle is divided transversely by a double row of ten black dots, and contains some faint silvery lines. Hind wings whitish grey, shaded with greyish brown along the margin; vein 4 is present in this species. 4 ♂. Expanse of wings 18 millims.

Fort The Dalles, Oregon, April 20th, 1872.

Semasia perangustana. (Plate LXXIII. fig. 7.)

Face whitish; the head rather greyish ochreous above; palpi projecting rather more than the length of the head beyond it, dusky whitish; the antennæ less than half the length of the fore wings, not pubescent. Fore wings—more than three times as long as wide, the apical margin very oblique, scarcely indented; the costa very slightly arched—olivaceous ochreous, sparsely irrorated with a few fuscous scales; some rather shining whitish costal streaks beyond the middle, with some few fuscous scales between them, and a pale rather shining whitish ocellated spot above the anal angle, including two or more short black streaks; a fuscous line along the apical margin at the base of the cilia, which are shaded with fuscous along their middle, but tipped with white. Hind wings greyish; vein 4 absent. 2 ♂. Expanse of wings 15 millims.

June 1872, Siskiyou Mountains, extreme north of California.

Semasia lapidana. (Plate LXXIII. fig. 8.)

Palpi compactly clothed, rather club-shaped, moderately short, projecting scarcely the length of the head beyond it; the apical joint not exposed; together with the head mixed greyish white and fuscous: antennæ in both sexes scarcely pubescent. Fore wings—three times as long as wide, the costa scarcely arched; apex rounded; apical margin very oblique—yellowish stone-colour, densely irrorated with greyish-white and greyish-fuscous scales: an

indistinct dusky grey line runs along the apical margin, more or less conjointly with another at the base of the stone-grey cilia. Hind wings with vein 3 forked near the margin in female, and in one wing only of the male; rather shining whitish grey in the female, more greyish in the male, slightly emarginate below the apex, especially in the male, with a slender reduplicated darker line along the base of the cilia. 1 ♂, 2 ♀. Expanse of wings 15 millims.

September 22nd, 1871, Crooked River, near Klamath Lake, Southern Oregon.

The difference in vein 3 of the two hind wings of the male above described led me to re-examine it very carefully; for had it been a female or an hermaphrodite I should have been disposed to consider this species and the following as only opposite sexes of the same; but the specimen is in all respects a true male, the frenulum on both sides being single; and it differs as decidedly as the female from *Semasia sublapidana*.

Semasia sublapidana. (Plate LXXIII. fig. 9.)

Palpi hirsute, projecting about the length of the head beyond it, roughly clothed with long hair-like scales, mixed greyish white and fuscous; the head and base of antennæ roughly clothed and tufted with scales of the same colour: antennæ in the male strongly pubescent or ciliated. Fore wings—fully three times as long as wide, the costa almost straight; apex rounded; apical margin very oblique, the anal angle rather less defined than in the preceding species, giving the wing a more lanceolate appearance—yellowish stone-colour, densely irrorated with whitish and greyish-fuscous scales; an indistinct dusky grey line runs along the base of the stone-grey cilia; a line of the same colour along the apical margin is broken into a continued series of indistinct spots: the yellowish-grey ground-colour of the wing is more visible towards the apical margin than in the preceding species. The hind wings very pale whitish grey; a slender reduplicated greyish line along the base of the cilia; vein 4 obsolete, *i. e.* vein 3 not forked. 4 ♂. Expanse of wings 16 millims.

End of September 1871, near Klamath Lakes, Southern Oregon.

This species in general appearance is singularly like the preceding one, *S. lapidana*; and being from the same locality, I long failed to distinguish them, considering them as only different sexes of the same species. The present species is slightly more slender than *S. lapidana*, and can be at once recognized by the lanceolate appearance of the fore wings, the hirsute palpi, and the very strongly pubescent antennæ of the male.

Semasia tenuiana. (Plate LXXIII. fig. 10.)

Palpi greyish white, twice the length of the head, very thickly clothed with long hairs projecting beyond the apical joint; antennæ stouter and slightly pubescent in the male; head and thorax greyish white. Fore wings—more than three times as long as wide, the costa slightly arched; apical margin very oblique—whitish, with a slight ochreous tinge, streaked and irrorated with cinereous; several small oblique cinereous streaks from the costa, the most

conspicuous one being about the middle, extended towards the rather shining white ocellated spot, which contains two black streaks, and is surrounded by a cinereous shade: an oblique abbreviated cinereous streak above the dorsal margin, before the middle of the wing, is preceded by a pale reddish ochreous shade along the base of the dorsal margin: cilia white, tipped and dusted with cinereous. Hind wings whitish with a faint rosy tinge; vein 4 present in the form of a short fork from vein 3 very near the margin. 1 ♂, 1 ♀. Expanse of wings 15 millims.

September 3rd, 1871, Siskiyou County, California.

Semasia parvana. (Plate LXXIV. fig. 1.)

Palpi scarcely longer than the head, greyish above, fuscous at the sides; antennæ greyish fawn. Fore wings—three times as long as wide, the apical margin slightly concave—whitish ochreous with a slight fawn-coloured tinge, streaked and dusted with cinereous; some abbreviated streaks along the costa, that in the middle being the most conspicuous; an irrorated cinereous shade along the dorsal half of the wing, extending to the rather ochreous ocellated spot, which contains some lustrous white scales and two black streaks: a cinereous line along the apical margin before the base of the cilia, which are ochreous white, dusted with cinereous. Hind wings very pale greyish white; cilia white. 2 ♂. Expanse of wings $11\frac{1}{2}$ millims.

April 1872, North Oregon.

This species is very like *Semasia tenuiana* in general appearance, but is smaller and rather more ochreous; moreover the venation of the hind wings is different, vein 3 having no branch near the hind margin as in that species.

Semasia stramineana. (Plate LXXIV. fig. 2.)

Head, palpi, antennæ, and fore wings pale straw-colour, the latter more than three times as long as wide; the apical margin slightly concave; the male with several short oblique brown streaks from the costa, alternated with shining whitish towards the apex; a slight ochreous shade before the sublustrous ocellated spot, which contains the usual two black streaks; a narrow brown line along the apical margin, and a line of fuscous scales at the base of the cilia. Female—fore wings nearly unicolorous; the costal streaks and the line along the apical margin scarcely indicated. Hind wings whitish; vein 4 absent. 1 ♂, 1 ♀. Expanse of wings $11\frac{1}{2}$ millims.

Denver, July 1872.

Semasia minimana. (Plate LXXIV. fig. 3.)

Head whitish; the palpi whitish, touched with greyish fuscous at the sides; antennæ whitish. Fore wings—more than three times as long as wide, the apical margin very oblique,

not indented—whitish, delicately spotted with fuscous: the costa with abbreviated fuscous streaks beyond the middle; an indistinct, rather shining, ocellated spot above the anal angle, containing two black streaks; several irregular fuscous spots and irrorations towards the base of the wing: cilia white, irrorated with fuscous. Hind wings whitish; vein 4 absent. 1 ♂, 1 ♀. Expanse of wings 10 millims.

Siskiyou County, California, Sept. 3rd, 1871.

Semasia argenticostana. (Plate LXXIV. fig. 4.)

Palpi short; the second joint thickly clothed with long hairs below, giving them a triangular appearance; these, with the antennæ, head, and patagia whitish grey. Fore wings—fully three times as long as wide, apex produced, acute; apical margin concave; the costa (without a costal fold in the male) not arched; the dorsal margin convex towards the base—dusky fawn-grey, with a silvery-white streak along the costa from the base to beyond the middle, where it leaves the costa and is divided into narrow, waved, and ragged branches, the upper one reaching to a small triangular white spot at the apex; a silvery-white streak along the middle of the wing, not sharply pointed, extends nearly to the ocellated patch, which is whitish, containing several small black spots; the dorsal margin is dull grey; cilia whitish, thickly speckled with grey. Hind wings pale brownish grey, with whitish cilia; vein 4 present. 1 ♂, 2 ♀. Expanse of wings 21 millims.

Northern Oregon, April 17th, 1872.

This species must be nearly allied to the *Grapholitha spiculana* of Zeller (Verh. z.-b. Ges. Wien, xxv. p. 289, pl. ix. fig. 23); but Prof. Fernald, who is well acquainted with the type in the Cambridge (Mass.) Museum, assures me that it is quite distinct. Through the kindness of Prof. Zeller I have had the opportunity of comparing it with his original drawing of *G. spiculana*, from which it differs chiefly in the form of the costal markings near the apex and in the more blunted termination of the narrower middle streak, also in the absence of a spot on the middle of the costa.

Semasia griseocapitana. (Plate LXXIV. fig. 5.)

Head and palpi yellowish white; the palpi roughly clothed with long scales projecting beyond the apical joint, touched with fuscous towards the apex; antennæ slightly pubescent in the male. Fore wings—with the costa somewhat arched; hind margin oblique, slightly concave—yellowish white, streaked and irrorated with olive-brown; some straight olive-brown streaks across the middle of the wing near the base, with spots of the same colour along the costa above them; the costa towards the apex and the upper part of the apical margin yellowish ochreous, streaked obliquely from the costa with brown and shining white; a conspicuous shining white wedge-shaped mark near the apex, and a shade of irrorated fuscous

scales above the shining white ocellated spot, which contains two or more black streaks or spots; the cilia white, irrorated with fuscous. Hind wing pale brownish grey; vein 4 present. 1 ♂, 2 ♀. Expanse of wings 18 millims.

Mount Shasta, &c., California, August and September 1871.

Semasia pallidicostana. (Plate LXXIV. fig. 6.)

Palpi short, white, clothed to the apex; head white; thorax white, somewhat tinged with grey posteriorly; antennæ greyish. Fore wings—with the costa slightly arched; apical margin scarcely concave below the apex—olivaceous grey; milky white along the costa, with some fuscous-grey (sometimes pale brownish) oblique streaks beyond the middle; an ocellated spot above the anal angle, lined with sublustrous grey, narrowly on the outer, widely on the inner edge, with two broken black streaks across it. Hind wings brownish grey, the veins and margins more darkly indicated; vein 4 present; cilia whitish grey. 1 ♂, 1 ♀. Expanse of wings 17 millims.

May and June 1871, Sonoma and Lake Counties, California.

Allied to the *"Anchylopera" striatana* of Clemens, which is the *"Pædisca albicepsana"* of Walker, but wanting the white middle streak along the cell.

Semasia infuscana. (Plate LXXIV. fig. 7.)

Head cinereous, sometimes brownish above: palpi projecting about the length of the head beyond it; cinereous: antennæ pubescent in the male. Fore wings—more than twice as long as wide; apical margin oblique, slightly indented in the middle—cinereous, much clouded with brownish fuscous, especially about the costal half of the wing, the line of demarcation being waved or angulated; the pale, almost obsolete ocellated spot contains a few black scales, and is preceded by a triangular fuscous-brown shade on the dorsal margin; the apex and upper half of the apical margin brownish, partly obscured by a fuscous shade extending through the cilia. Hind wings pale fuscous; cilia greyish; vein 4 present. 1 ♂, 1 ♀. Expanse of wings 21 millims.

San Francisco, May 1871.

Semasia? oregonana. (Plate LXXIV. fig. 8.)

Head cinereous, tufted above: palpi short; the second joint thickly clothed; third joint comparatively bare: antennæ pubescent in the male. Fore wings fuscous grey, more or less faintly shaded with cinereous or brownish-fuscous streaks and spots. The more usual variety is nearly unicolorous, with a few streaks only visible towards the apical portion of the wing and with a very faintly indicated basal patch outwardly angulated about the middle. A more strongly-marked variety, female, has the basal patch more distinctly defined, covering the basal

third of the wing, with a triangular patch before the anal angle, and some ill-defined small blotches above it towards the apex, with some fuscous streaks passing through or between them from the costa before the apex towards the apical margin and anal angle. The hind wings are pale brownish fuscous, paler beneath, especially in the female: anal tuft with an ochreous tinge in both sexes. 6 ♂, 1 ♀. Expanse of wings 19 millims.

I met with this species in some abundance at Camp Watson, on the John Day's River, about 70 miles from Canyon City, in Oregon, in the beginning of April 1872, and have in my own collection several varieties intermediate between the two above noticed; but the insect is very plain in its colouring, and, although very distinct, is by no means a striking species.

Semasia amphorana. (Plate LXXIV. fig. 9.)

Palpi greyish fuscous, depressed, much widened in the middle, thickly clothed to the apex, not twice the length of the head: antennæ slightly pubescent in the male; greyish fuscous: head and thorax greyish fuscous. Fore wings—three times as long as wide, the costa nearly straight, with no costal fold in the male; apical margin oblique—whitish grey, almost entirely shaded with fuscous from the base to beyond the middle, leaving only a few wavy grey streaks: beyond the middle is an ocellated mark of the form of a double-handled bottle, extending over the entire width of the wing; the lower half of this within the anal angle is occupied by a collection of twelve rather square black dots in two groups of six each, divided and margined at the sides by shining silvery scales; the upper half is crossed by two transverse greyish-fuscous lines, the short neck of the bottle opening on the costa, the margins and handles being marked out internally with greyish fuscous, externally with sublustrous silvery lines: cilia shining greyish fuscous: underside pale shining yellowish grey. Hind wings pale brownish fuscous; cilia paler. 7 ♂, 1 ♀. Expanse of wings 17–21 millims.

Beginning of April, Camp Watson, on John Day's River, Oregon.

This species greatly resembles *Pædisca dodecana* of Zeller in the character of its ornamentation, especially in the cluster of black dots. The absence of a costal fold and the much darker colour of the fore wings at once distinguish it.

Semasia refusana. (Plate LXXIV. fig. 10.)

Grapholita refusana, *Walk. Cat. Lep. Het.* xxviii. p. 382.

Palpi projecting about the length of the head beyond it, together with the head rough brownish ochreous; the apical joint not exposed: antennæ brownish, slightly pubescent. Fore wings—with the costa slightly arched, apex rounded; apical margin oblique, slightly indented—dull cinereous ochreous, profusely irrorated with brownish scales, giving the whole wing, excepting the parts adjacent to the costal margin, a dull brownish appearance; there are some abbreviated brownish streaks towards the apex alternating with silvery-grey metallic lines, which are continued round the margins of the ocellated spot; this contains five black

dots, three before and two beyond a metallic silvery-grey middle streak; there is a line of brownish scales along the apical margin; and the cilia are much suffused with brownish. Hind wings dull brownish grey, with paler cilia. Abdomen brownish fuscous, with pale anal tuft. Type ♂. Expanse of wings 15 millims.

St. Martin's Falls, Albany River, Hudson's Bay. Presented by Dr. Barnston.

Semasia perstructana. (Plate LXXV. fig. 1.)

Sciaphila perstructana, *Walk. Cat. Lep. Het.* xxviii. p. 343.

Palpi projecting fully the length of the head beyond it; the second joint thickly clothed, obtuse; the apical joint exposed: antennæ not pubescent. Fore wings—with the costa almost straight, the apical margin oblique, slightly impressed below the apex—dark brownish fuscous, with several shining, short, geminated costal streaks; the third pair from the apex blending into a shining steel-blue double band, outwardly angulated above the middle, the others towards the apex being also tipped with steel-blue metallic streaks; the ocelloid patch is bright shining metallic steel-blue on its inner and outer sides; a square dirty-whitish sublustrous patch on the middle of the dorsal margin is interrupted by three slender brownish-fuscous lines, the middle one being the thickest: cilia shining brassy whitish, with a slender fuscous line along their base. Hind wings pale brownish fuscous, with paler cilia. Type ♀. Expanse of wings 13 millims.

St. Martin's Falls, Albany River, Hudson's Bay. Presented by Dr. Barnston.

HYSTRICHOPHORA.*

Caput hirsute vestitum. Palpi ultra apices hirsute vestiti, capite quasi ter longiores, articulo medio triangulari, apicali brevissimo. Antennæ maris subpubescentes. Alæ anticæ parum ornatæ, costâ arcuatâ (♂ revolucro nullo), apice depresso pæne falcato, margine apicali suboblique concavo, dorsali convexo; venis duodecim singulis. Alæ posticæ venâ mediâ prope quartam ortâ, margine postico sub apice vix impresso.

Head thickly clothed with long hair-like scales, projecting forward between the antennæ: palpi also roughly clothed with long hair-like scales, which extend considerably beyond the end of the short apical joint, projecting twice the length of the head beyond it; the second joint thickened in the middle above, almost triangular; the apical joint very short, obtuse. Fore wings with the costa evenly arched, the apex produced and depressed, but scarcely falcate; the apical margin slightly oblique, concave; dorsal margin rounded; the male without a costal fold; veins 12, all separate at their origin. Hind wings with the outer margin slightly indented below the apex, rather wide, with long cilia; the median vein with long hairs above at the base; vein 5 arising near the same point as 4. The inner spur of hind tarsi considerably longer than the outer.

* ὕστριχος, brush; φορεῖν, to bear.

This genus may be distinguished from *Phoxopteryx*, Tr., and from *Steganoptycha*, H.-S., by its longer and more conspicuous palpi, as well as by the form of their middle joint, from *Semasia* by its less oblique apical margin and almost falcate apex, and from *Pædisca* by the absence of a costal fold in the male; whilst the venation of the hind wings separates it from *Grapholitha*, Tr. It seems, perhaps, more nearly allied to *Phoxopteryx* than to any other genus hitherto characterized; but until it may find its place in some general revision of the group, the peculiarities of the species under description seem to demand for it a new generic as well as specific definition.

Type *Hystrichophora leonana.*

Hystrichophora leonana. (Plate LXXV. figs. 2 & 3.)

Palpi three times the length of the head, roughly clothed with long hairs projecting beyond the short apical joint; tawny fawn-colour: antennæ slightly pubescent in the male. The fore wings—fully twice as long as wide, with the costa arched (male without a costal fold), the apex produced, apical margin concave, dorsal margin convex—tawny fawn-colour, paler towards the costa, with oblique fulvous costal streaks, the first two or three meeting at right angles above the middle of the wing, others less distinct running to the dorsal margin; the most conspicuous of these costal streaks, which runs to the middle of the apical margin, is followed by a sublustrous metallic streak of equal length and by some smaller metallic streaks beyond it towards the apex; the ocellated patch contains also some sublustrous metallic scales, and sometimes two or three black dots; a tawny line runs along the apical margin at the base of the cilia, which are tipped with shining golden brown. Hind wings grey, with paler cilia. 4 ♂, 1 ♀. Expanse of wings 19 millims.

Var. **aurantiana.**

Fore wings golden saffron streaked with golden brown, paler towards the costa. 2 ♂.

This cannot be considered a distinct species; it differs only in colour, the shape and position of the markings being the same as in the type.

The typical form occurred from the middle of May to the middle of June 1871, in Sonoma, Lake, and Mendocino Counties, California; the bright variety in Shasta County in the middle of July.

GRAPHOLITHA (*H.-S.*), *Hein.*

Grapholitha vitrana. (Plate LXXV. fig. 5.)

Head greyish fuscous: the palpi short, clothed with long scales below; the apical joint almost concealed; greyish fuscous, whitish at the sides and beneath: antennæ greyish fuscous, simple in both sexes. Fore wings olivaceous fuscous, irrorated about the middle with greyish-white scales, and streaked with slender greyish-white lines on the the apical half; some dull white geminated streaks on the costa merging into shining brassy lines, two of which enclose the greyish ocellated patch with its few black scales or streaks; the first of

these two, forming the inner margin of the ocellated patch, is angulated at the middle, becoming as it were a narrow fascia dividing the irrorated from the striated portion of the wing: the cilia are shining brassy, with a fuscous line along their base slightly interrupted below the apex. Hind wings pale brownish, with whitish cilia. Abdomen annulated with olivaceous and whitish grey. 4 ♂. Expanse of wings 17 millims.

April 1872, Northern Oregon.

Grapholitha cæruleana. (Plate LXXV. fig. 6.)

Palpi short, obtuse, greyish; head and antennæ fuscous. Fore wings bronzy brownish fuscous, indistinctly marked from the costa before the middle with some shining purplish metallic scales: beyond the middle is a narrow shining angulated metallic fascia; the upper half, sloping outwards from the costa, is of a beautiful lilac or purplish tinge; the lower half, which forms the straight internal margin of the ocellated patch, is brassy yellow: beyond this fascia from the costa are first a group of three metallic white and lilac streaks, the outer one being the longest, then a single streak of the same colour nearly reaching the straight brassy yellow external margin of the ocellated patch, which contains two or more black streaks, and beyond this two more short whitish costal streaks before the apex, terminated with shining lilac: the cilia are shining lilac grey, with a black line along their base, sometimes interrupted by a whitish-lilac spot below the apex. Hind wings pale brownish fuscous: cilia whitish. Abdomen fuscous, the segments indicated by greyish-fuscous bands. 1 ♂, 1 ♀. Expanse of wings 13 millims.

Rouge River, South Oregon, May 1872.

Grapholitha conversana. (Plate LXXV. fig. 7.)

This species differs from the preceding in having a slightly oblique wedge-shaped whitish spot on the middle of the dorsal margin, interrupted (not divided as in *G. interstinctana,* Clem.) by a short streak of the dark ground-colour, and connected at an angle on the middle of the wing with two metallic costal streaks: the metallic margins of the ocellated patch are not parallel as in *G. cæruleana,* but slightly converging towards the dorsal margin. 3 ♂, 1 ♀.

Taken at the beginning of April 1872, at Camp Watson, on John Day's river; also met with in Central Oregon.

Grapholitha lunatana. (Plate LXXV. fig. 8.)

Head, antennæ, and palpi greyish fuscous. Fore wings—nearly three times as long as wide, the apical margin very oblique, the apex rounded—fuscous brown, with a white slender obliquely crescent-shaped dorsal streak before the middle, above which are two indistinct sublustrous costal streaks; beyond these is a slender angulated metallic fascia, whitish at the costa, preceding the ocellated patch, which is followed by a similar fascia, and contains some

black transverse lines; above it, on the costa and between the fasciæ, are three abbreviated whitish costal streaks, tipped with shining lilac; and before the apex are two similar streaks, the outer one almost communicating with a pale dot in the cilia below the apex: cilia sublustrous greyish, with a black line along their base. Hind wings whitish grey, with paler cilia. 4♂. Expanse of wings 14 millims.

April 1872, North Oregon.

Grapholitha americana. (Plate LXXV. figs. 9 & 10.)

Palpi scarcely longer than the head, fuscous brown, paler beneath; the apical joint visible: head, thorax, and antennæ fuscous brown. Fore wings—more than twice as long as wide, the costa evenly arched, apical margin scarcely indented below the apex, rather oblique—fuscous brown, much overrun with rather shining bluish-purple streaks and blotches; a large conspicuous white triangular spot on the middle of the dorsal margin, having a slight excrescence at its outer edge, and sometimes containing at its base a few brownish-fuscous scales; an ocellated spot is faintly indicated by two or three black streaks or spots between two of the purplish shining bands above the anal angle: underside—male, glossy greyish brown; female, dull fuscous brown. Hind wings—male whitish, much shaded towards the margin with fuscous brown, cilia greyish; female fuscous brown, cilia the same. 2♂, 2♀. Expanse of wings 17 millims.

Mendocino County, California, June 12th, 1871.

Grapholitha trossulana. (Plate LXXVI. fig. 1.)

Palpi short and tufted, the apical joint not exposed: head, palpi, thorax, antennæ, and fore wings pale ochreous fawn-colour. The fore wings—nearly three times as long as wide, the costa slightly arched, apical margin concave—with some oblique shining steel-coloured costal streaks beyond the middle, communicating with the margins of the ocellated spot, which are also bright steel-colour, enclosing at its upperside three black streaks; above it is an oblique, black, detached streak; the anal angle is also irrorated with black; and there are a few scattered black scales on the basal third of the wing below the middle: the apex is ferruginous: the cilia whitish, tipped with fuscous, and with a black line along their base: a pale dash from the middle of the apical margin runs through the upper end of the ocellated patch. Hind wings greyish fuscous, with paler cilia. 1♂. Expanse of wings 13 millims.

Hatchet Creek, Shasta County, California, July 15th, 1871.

In the genus "*Grapholita*" (but evidently not using the name in the limited sense intended by Heinemann in his subgenus *Grapholitha*, H.-S.), Walker describes:—

Grapholita refusana, Walk.: see *Semasia refusana*, p. 63.
—— *strenuana*, Walk.: see *Pædisca strenuana*, p. 52.
—— *exvagana*, Walk., = *Pædisca strenuana*, see p. 52.

Grapholita discigerana, Walk.: see *Phoxopteryx discigerana*, p. 72.
—— *conflexana*, Walk., = *Phoxopteryx comptana*, Fröl.
—— *divisana*, Walk.: see *Phoxopteryx divisana*, p. 74.
—— *metamelana*, Walk., = *Phoxopteryx discigerana*, see p. 72.
—— *discoferana*, Walk., = ? "*Anchylopera*" *spireæfoliana*, Clem.
—— *sagittana*, Walk., = "*Joplocama*" *formosana*, Clem.
—— *solicitana*, Walk.: see *Pædisca solicitana*, p. 55.

PROTEOPTERYX*.

Palpi breves, articulo secundo squamis suprà et infrà projectis vestito, articulum apicalem pæne occultantibus. Caput suprà floccosum ; thorax plenus. Alæ anticæ (♂ revolucro costali nullo) latitudine ter longiores, costâ leviter arcuatâ, margine apicali obliquo apud venam quartam subito inciso ; venis 7ª et 8ª vix separatim originatis, 8ª ad costam finitâ. Alæ posticæ subovatæ, sub apice leviter impressæ, venis iis Grapholithæ *similibus : colores varii, dimidio dorsali sæpius costæ dissimili, capite huic vel illi concolori.*

Palpi short, projecting about the length of the head beyond it, compressed ; the second joint thickly clothed with long scales, projecting below and around the scarcely exposed apical joint ; thorax stout ; abdomen rather broad, slightly tufted in male. Fore wings without a costal fold in the male, fully three times as long as wide ; the costa gently and evenly arched ; apical margin oblique, abruptly indented on branch 4 ; veins 7 and 8 scarcely separate at their origin ; branch 8 ending in the costa : the dorsal margin bulging at the base, nearly straight beyond. Hind wings subovate, slightly indented below the apex ; branches 3 and 4 from a common pedicle ; branch 5 not bent over at its origin, rather remote from branch 4, as in the genus *Grapholitha* : very variable in colouring, with indistinct abbreviated costal streaks ; the dorsal margin usually differing considerably in colour from the costal half of the wing ; an ill-defined ocellated spot above the anal angle. Head corresponding in colour sometimes with the dorsal, sometimes with the costal margin.

Type *Proteopteryx emarginana*.

Proteopteryx emarginana. (Plate LXXVI. figs. 2–6.)

Palpi short, projecting about the length of the head beyond it, with the head greyish white, reddish brown, or ferruginous, corresponding either with the costal or dorsal half of the wing : antennæ simple in both sexes. Fore wings—fully three times as long as wide, with the costa slightly arched ; the apical margin oblique, abruptly indented on vein 4—whitish or reddish brown, usually with a prolonged dorsal patch from near the base to beyond the middle, extending over half the wing ; chocolate-brown, ochreous white, or ferruginous, in contrast to the paler or darker colour of the opposite half : the costa is slightly streaked ; the

* Πρωτεύς, Proteus ; πτέρυξ, wing.

ferruginous or ochreous ocellated spot ill-defined, enclosed by paler streaks meeting at the anal angle: cilia greyish brown. Hind wings fuscous brown; cilia paler. 6 ♂, 3 ♀. Expanse of wings 15–17 millims.

About 40 specimens were taken in June 1871, in Mendocino and Lake Counties, California.

Var. a. The costal and apical portions of the fore wings mottled brown, with several short whitish geminated costal streaks; the elongated dorsal blotch, as also the head and palpi, ferruginous: antennæ brown.

Var. β. The head and palpi reddish brown; the costal and apical portion of the wings reddish brown, mottled with darker brown; the elongated dorsal blotch and ocellated spot white tinted with ochreous; some short whitish geminated costal streaks.

Var. γ has the head and palpi, together with the costal half of the fore wings and the ocellated spot, dirty whitish, with some short chocolate-brown costal streaks, the elongated dorsal blotch chocolate-brown, the apex tinged with brownish fuscous.

In some varieties the character of the ornamentation is somewhat changed, the dorsal blotch being obsolete or merged in the generally mottled appearance of the wing, in which various shades are represented. Among all these, however, there appeared to be scarcely any variation in size.

Later in the year I met with a smaller form, taking sixteen or eighteen specimens on Crooked River, in Oregon, in September. These are exactly similar in structure, but exhibit some differences in the general character of their ornamentation, which leads to a suspicion that they may be found to belong to a separate species. I have figured two of these specimens, in which it will be seen that the dorsal blotch is, as it were, continued into the ocellated patch, dividing the whole length of the wing more distinctly into two halves.

Some specimens of the larger form approach this colouring; but in none is it so distinct, and whereas in those it appears to be the exception, among the smaller specimens taken in September it is almost the rule. I shall not, however, venture to describe those two forms as specifically distinct, but would rather consider the smaller one as the more northern form, or perhaps the second or autumnal brood of the larger.

Var. δ. Head, palpi, and cilia yellowish grey: antennæ and costal half of fore wings, together with the extreme apical margin, dull brown; the dorsal half, including the obsolete ocellated patch, stone-grey, the division between the two colours evenly undulating.

Var. ε. Head and elongated dorsal blotch, together with the obsolete ocellated patch, ferruginous; the costal half and extreme apical margin mottled whitish grey and dark brown, with short geminated pale costal streaks and an undulating line along the middle of the wing. 2 ♂, 5 ♀. Expanse of wings 14 millims.

PTHOROBLASTIS, *Led.*

Pthoroblastis texanana. (Plate LXXVI. fig. 7.)

Palpi short; the apical joint scarcely exposed, together with the head and antennæ ochreous drab: thorax stout, dusky drab. Fore wings—more than twice as long as wide, the costa arched; apical margin oblique, scarcely indented below the apex—dull greyish drab, with a narrow obscure reddish-brown fascia from about the middle of the costa, margined on both sides with leaden grey to within the anal angle, forming with two leaden-grey streaks from its outer edge an almost equilateral triangle, from the apex of which a short narrow brown streak runs to the apex of the wing; some short oblique geminated costal streaks and a narrow line along the apical margin dirty whitish, a row of black dots above the anal angle running parallel with the apical margin: cilia dull drab, with a fuscous line along their base. Hind wings fuscous brown. 2 ♂. Expanse of wings 13 millims.

Texas, May and July 1875.

CARPOCAPSA, *Tr.*

Carpocapsa latiferreana. (Plate LXXVI. fig. 8.)

Palpi short, scarcely thickened in the middle; not profusely clothed; together with the head and antennæ brownish grey: thorax stout, speckled with grey and brown. Fore wings—about twice as long as wide, with the costa arched, apical margin scarcely indented below the apex—reddish brown, speckled with grey towards the base, with a broad metallic bronzy median fascia, wider on the dorsal than on the costal margin; some short geminated whitish-ochreous costal streaks beyond it, which are obliquely produced in shining metallic streaks towards the apical margin, along which runs a narrow black line at the base of the dusky-grey cilia: a large dark-margined metallic bronzy patch lies above the anal angle and before the ocellated patch (which contains some narrow black transverse streaks), with another smaller metallic spot beyond it. The hind wings are fuscous, paler towards the base, with whitish ochreous cilia. 2 ♀. Expanse of wings 6–9 lines.

Mendocino County, California, June 9th, 1871; also in Southern Oregon, May 1872.

This species is very nearly allied to a species of which I have specimens from the Eastern States, and which Professor Fernald informs me is likely to be described by Professor Riley under the name of *orichalceana*; but the Western form now figured differs in its much wider metallic fascia, in the metallic patch above the anal angle not being produced as a second fascia to the costa, and in the costal streaks being less oblique and more distinct. I will not, however, anticipate the description of the allied species, which is not in the British-Museum collection.

In this genus Walker describes :—

Carpocapsa distigmana, Walk.,	= "*Pœcilochroma*" *dorsisignatana*, Clem.
—— *inexpertana*, Walk. :	sec *Penthina hebesana*, p. 31.
—— *ferrolineana*, Walk.,	= *Sericoris coruscana*, Clem.
—— *clavana*, Walk.,	= *Exartema inornatanum*, Clem.

STEGANOPTYCHA, *Stph.*

Steganoptycha liturana. (Plate LXXVI. fig. 9.)

Head and palpi fawn-colour; the apical joint fuscous: antennæ of the male ciliated Fore wings—three times as long as wide, the costa slightly arched but flattened on the middle, the apical margin not perceptibly impressed, dorsal margin scarcely bulged near the base—ochraceous fawn-colour, blotched and clouded with rich brown, mixed with some fuscous; an abbreviated half-fascia on the middle of the dorsal margin, with an almost obsolete pale spot from the costa above it, sometimes forming with it a sharply angulated fascia, and a blotch above the anal angle inwardly falcate at its upper end, both pale yellowish ochreous; some pale spots on the costa towards the apex and on the apical margin below it: the cilia pale ochreous, much tinged with fuscous, especially at the anal angle. Hind wings fuscous-brown. 2 ♂. Expanse of wings $5\frac{1}{2}$–$6\frac{1}{2}$ millims.

Rouge River, May 1872.

Steganoptycha lagopana. (Plate LXXVI. fig. 10.)

Head, palpi, and antennæ chalky white. Fore wings chalky white, streaked along the costa with brownish fuscous: a quadrangular scarcely oblique brownish-fuscous spot on the dorsal margin before the middle, and another beyond the middle, sometimes meeting or almost meeting some less conspicuous markings coming from the costa above them. There are some streaks and shades of brown or brownish fuscous before the apex, and a black transverse streak at the upper edge of the ocellated patch above the anal angle, with one or two black dots below it. Hind wings brownish grey. 2 ♂, 3 ♀. Expanse of wings 15–22 millims.

Colusa County, California, June 28th, 1871.

This species is somewhat variable in its size, and in the arrangement and distinctness of its markings.

Steganoptycha biangulana. (Plate LXXVII. fig. 1.)

Palpi, thorax, and antennæ smoky black; the palpi extended about the length of the head beyond it; the head black, with a rather greyish-black tuft above. The fore wings—three times as long as wide, with the costa slightly bent, the apex much rounded—ashy grey, irrorated with smoky black scales; the costal half of the wing suffused with smoky black, the pale ground-colour cutting two angles in the lower edge of the black shade, one before and one beyond the middle; a dark sooty spot at the apex pointing inwards, and several small sooty spots along the dorsal margin. Hind wings pale greyish fuscous, the cilia scarcely

paler: underside greyish fuscous; the costal margins of both wings dotted with fuscous. 1 ♂. Expanse of wings 21 millims.

On Crooked River, near Klamath Lakes, Southern Oregon, towards the end of September 1871.

Steganoptycha purpuriciliana. (Plate LXXVII. fig. 2.)

Palpi small: head, palpi, and antennæ creamy white. Fore wings—twice as long as wide, the costa slightly arched; the apical margin rather oblique, scarcely indented—creamy white, speckled with greyish fuscous on the basal half, which is obliquely margined with bluish fuscous, extending over the apical half of the wing, with the exception of a creamy white costal triangle, from which some shining steel-blue and silvery streaks running to the anal angle enclose the nearly obsolete ocellated spot: cilia purple, with a reddish ferruginous line along their base. Hind wings greyish, slightly paler towards the tips, with a slender pale line along their base. 4 ♂, 1 ♀. Expanse of wings 14 millims.

Mount Shasta, California, August 1871.

PHOXOPTERYX, *Tr.*

Phoxopteryx discigerana. (Plate LXXVII. fig. 3.)

Grapholita discigerana, *Walk. Cat. Lep. Het.* xxviii. p. 384.
—— metamelana, *Walk. Cat. Lep. Het.* xxviii. p. 385, and xxxv. p. 1795.
Anchylopera spireæfoliana, *Clem., Grote & Rob. Trans. Amer. Ent. Soc.* ii. p. 84.

Head and antennæ brownish, the palpi white, with the apical joint scarcely exposed. Fore wings—with the costa arched, the apex produced and falcate—white, with a conspicuous reddish-brown patch along the dorsal margin, gradually widening from the base to the middle, obliquely margined externally; beyond it is a costal streak of the same colour, running parallel to its oblique outer margin, blending with a faint ferruginous shade beyond the middle of the wing: three small dark brown (almost fuscous) triangular oblique costal dashes, each followed by a minute streak of the same colour, blend into a pale ferruginous grey shade, containing two black streaks, which follows the apical margin to the anal angle and dorsal margin: there is a conspicuous triangular brownish-fuscous spot at the apex, and a minute line below it, dividing the cilia, which are white, with a slender line along their base. Hind wings very pale grey or cinereous. Type ♂. Expanse of wings 15 millims.

Nova Scotia. From Lieut. Redman's collection.

There are two species under the above name in the British-Museum collection. The first two specimens of the series are undoubtedly *G. discoferana*, Walk.; the last three only are *P. discigerana*. Messrs. Grote and Robinson (Insect Tracts N. America, vol. i.) hold that *G. discigerana*, Walk., is identical with "*Anchylopera*" *spireæfoliana*, Clem., and consider *G. discoferana*, Walk., a synonym of *A. dubiana*, Clem. I should have been disposed to refer the two upper specimens and *G. discoferana* to *spireæfoliana*, Clem., and to maintain the

distinctness of the present *P. discigerana,* which appears to differ from *P. spireæfoliana* in its less shaded and suffused apical margin and anal angle, as well as in its much larger average size. It differs from its European ally (*P. lundana*) in the whiter ground-colour of the fore wings, and in the conspicuous white dash beyond the first large costal streak.

I have a considerable series of *P. discigerana* from California, and two specimens of *G. discoferana,* which I had certainly thought were only darkish varieties of *A. spireæfoliana,* Clem., as they agree well with that species in the form and position of their markings; but I am not sufficiently acquainted with *A. dubiana* to feel sure upon this point. If they are really the same as *dubiana,* Walker's name "*discoferana*" must take precedence. *Grapholita metamelana,* Walk., must, I think, be considered only a small variety of *discigerana.* This specimen is a female from Mr. Carter's collection, and has been accidentally redescribed by Mr. Walker in his Supplement.

Phoxopteryx pacificana. (Plate LXXVII. fig. 4.)

Head much tufted above; palpi extending the length of the head beyond it, fully clothed, both dark purplish grey; antennæ the same. Fore wings—with the costa much arched—rather shining leaden grey, streaked and irrorated with rich reddish brown, of which colour there is also an elongated patch occupying more than the first third of the dorsal margin and extending half across the cell; its oblique outer edge sharply defined; an oblique fascia from the middle of the costa to within the anal angle, with an acute projecting angle on the middle of its outer edge; on the costa before it are several abbreviated oblique streaks, and beyond it three more conspicuous triangular ones, with pale geminated streaks between them: the falcate apex is of the same rich reddish brown; and an oblique elongated spot lies between it and the angle of the central fascia: cilia shining whitish grey, with a geminated white streak running through them below the sharply falcate apex. Hind wings and cilia pale brownish. 1 ♂, 3 ♀. Expanse of wings 18–22 millims.

Mendocino County, June 10th, 1871, and Rouge River, Southern Oregon, May 1872.

Phoxopteryx apicana. (Plate LXXVII. fig. 5.)

Grapholita apicana, *Walk. Cat. Lep. Het.* xxxv. p. 1795.

The palpi short, whitish; head pale ferruginous; antennæ ferruginous. Fore wings ferruginous, with the apex falcate and the costa arched; the basal and subcostal portion more deeply shaded, interrupted by a geminated oblique bluish costal streak, which meets at an angle about the middle of the wing a pale bluish dorsal blotch, forming with it an indistinct angulated fascia bounding the basal patch: there are some whitish abbreviated costal streaks from which bluish lines run to form the margins of the ill-defined ocellated patch above the anal angle; a short fuscous line running along the middle portion of the apical margin: the cilia are greyish fuscous, with a shining silvery line along their base, and two whitish spots below the apex. Hind wings brownish fuscous; cilia paler. Type ♀. Expanse of wings 9 millims.

Nova Scotia, from Lieut. Redman's colleetion. I also met with this speeies, at the beginning of June 1872, in Southern Oregon.

Nearly allied to *P. muricana*, of whieh it may be the Western representative form; but it wants the beautiful steel-blue at the base of the wing, and is generally a plainer and less distinetly marked speeies.

Phoxopteryx muricana. (Plate LXXVII. fig. 6.)

Palpi short, whitish, the apieal point almost eoneealed: head and patagia pale ferruginous: antennæ slightly darker; thorax purplish grey. Fore wings—the costa arched; apex falcate—with the basal portion (nearly half) steel-blue towards the costa, blending into reddish brown outwardly along the dorsal margin, bounded on the dorsal half by a whitish oblique patch, and on the costal half by a reddish-brown or ferruginous ill-defined fascia, which is conneeted on its outer edge with a ferruginous shade towards the apex: several very short oblique whitish eostal streaks, prolonged in blue lines towards the upper edge of the pale ocellated patch, of which the inner half is suffused with shining steel-blue; there is a shining silvery line at the base of the pale ochreous eilia. Hind wings brownish fuscous; cilia paler. Type ♀. Expanse of wings 10 millims.

Beginning of May 1871, Washington.

Phoxopteryx divisana. (Plate LXXVII. fig. 7.)

Grapholita divisana, *Walk. Cat. Lep. Het.* xxviii. p. 385.

Face and palpi white; head yellowish above; antennæ missing in the type, but in another specimen yellowish white; thorax ochreous in front, dark reddish brown above. Fore wings—nearly three times as long as wide, with the costa rounded at the base, straight beyond; the apex faleate—orange-ochreous, with a dark ferruginous basal patch oceupying rather more than the dorsal half of the wing, and extending about one third along the dorsal margin, completely surrounded by a diffused band of bright lilac, reaching to the costa above it and nearly halfway along the dorsal half of the wing: beyond this the eosta is shaded with bright ferruginous, blending with an almost orange yellow below it: there are some minute yellowish-white specks along the eosta, and two or three minute streaks before the apex, which is bright ferruginous; a small dark ferruginous dash lies along the base of the cilia below it. Abdomen grey. Hind wings pale greyish, with oehreous eilia. Type ♂. Expanse of wings 13 millims.

Nova Scotia. From Lieut. Redman's collection.

Phoxopteryx cometana. (Plate LXXVII. fig. 8.)

Palpi sharp and pointed, greyish fuseous, paler beneath; head greyish fuscous; antennæ fuseous. Fore wings—three times as long as wide, the apex faleate—fuseous; with some

shining bluish streaks, two of which before the middle of the costa blend into a narrow, wavy, white, oblique double fascia; other two beyond the middle are irregularly continued towards the anal angle; some abbreviated silvery-white costal streaks before the apex and two white spots in the fuscous cilia below the apex; towards the anal angle the cilia are whitish, touched with fuscous. Hind wings rather paler fuscous, with a brownish tinge. 1 ♀. Expanse of wings 13 millims.

Mendocino County, California, May 9th, 1871.

RHYACIONIA, *H.-S.*

Rhyacionia juncticiliana. (Plate LXXVII. fig. 9.)

Palpi depressed, acute, thickly clothed, the apical joint not exposed, together with the head tawny red: antennæ pubescent in the male: thorax and fore wings rosy whitish; the latter (with the costa gently arched, the apical margin oblique) minutely streaked with wavy lines of tawny red, and shaded off gradually from the base—first, towards a darker tawny-red oblique central fascia outwardly margined with white, and, secondly, beyond it towards the tawny-red apical margin: an obsolete basal patch is faintly indicated towards the dorsal margin: the costal portion of the wing, just beyond the central fascia, has a strong rosy tinge: a line of fuscous scales runs along the apical margin at the base of the cilia, which are also rosy and are not separated by any pale line from the darker shade of the apical portion of the wing, as in the allied species *R. hastiana*, Hübn., which has also the costa more abruptly arched towards the base. Hind wings minutely speckled greyish fuscous. 7 ♂. Expanse of wings 20 millims.

Shasta County, California, July 16th, 1871.

DICHRORAMPHA, *Guén.*

Dichrorampha radicicolana. (Plate LXXVII. fig. 10.)

Palpi tawny, projecting nearly twice the length of the head beyond it, profusely clothed, the apical joint concealed: head tufted above, tawny; antennæ the same. Fore wings pale tawny; the costa arched; apex produced; apical margin oblique, indented below the apex: a basal patch, acutely angulated externally beyond the middle of the cell, is shaded within its outer margin with tawny brown; a triangular patch of the same colour before the anal angle, the intermediate abbreviated pale fascia interrupted by waved tawny lines: a tawny brown shade on the apical margin, extended inwards towards the middle of the wing, and a few short paler brown streaks from the costa: the cilia rather shining yellowish white, divided in the middle by a tawny line parallel with the apical margin; a fuscous spot on the cilia at the apex. Hind wings brownish fuscous; the cilia yellowish white, divided by a tawny line. 1 ♀. Expanse of wings 17 millims.

Bred, at the end of May 1872, from a larva found in March, feeding in roots of a species of *Scrophularia?*, at Camp Watson, on John Day's River, Oregon.

Walker's only North-American species in the genus *Dichrorampha* is

Dichrorampha scitana=" *Grapholitha* " *interstinctana*, Clem.

The following European species of Tortricidæ *have been observed also in North America.*

[In this list the numbers in brackets refer to the 'Catalog der Lepidopteren des europäischen Faunengebiets,' by Drs. Staudinger and Wocke, published in January 1871.
An asterisk (*) denotes that, so far as I am aware, the species has not before been recorded as occurring in North America.]

Rhacodia effractana, Fröl. (649), Zell. Verh. z.-b. Ges. Wien, xxiv. p. 431.

Teras hastiana, Lin. (652).
var. *divisana*, Hüb., Rob. Trans. Am. Ent. Soc. ii. p. 280.
var. *ptychogrammos*, Zell. Verh. Wien, xxv. p. 213.
Several varieties from California and Oregon, 1871–72.
?=*inana*, Rob. } Rob. Trans. Am. Ent. Soc. ii. p. 281.
?=*maculidorsana*, Clem. }

**Teras maccana*, Tr. (654), Crooked River, Oregon, September 22, 1871.

**Teras parisiana*, Guén. (663).
=*placidana*, Rob. Trans. Am. Ent. Soc. ii. p. 282.

Teras tristana, Hüb. (657).
var. *famula*, Zell. Verh. z.-b. Ges. Wien, xxv. p. 214.

Teras ferrugana, W. V. (676), Zell. Verh. z.-b. Ges. Wien, xxv. p. 211.
var. ? *semiannula*, Rob.

**Teras permutana*, Dup. (659), Mount Shasta, California, August 1871. Maine (teste Fernald, MS.).

Cacœcia lævigana, S. V. (691), Zell. Verh. z.-b. Ges. Wien, xxv. p. 218.

**Idiographis centrana*, H.-S. (707), Shasta County, California, July 1871.

**Lozotænia musculana*, Hüb. (712), Rouge River, Oregon, May 1872.

?*Lophoderus politanus*, Hüb. (719) } Zell. Verh. z.-b. Ges. Wien, xxv. pp. 224, 225. [See p.15.]
?=*Tortrix incertana*, Clem. }
?=*Tortrix lutosana*, Clem. }

**Lophoderus ministranus*, Lin. (725) (teste Fernald, MS.).

Argyrotoxa bergmanniana, Lin. (728), Zell. Verh. z.-b. Ges. Wien, xxiv. p. 433.
**Ablabia gouana,* Lin. (770), Burney Falls, California, July 19, 1871.
Ablabia osseana, Scop. (767) } Mösch. Stet. ent. Zeit. 1870, p. 373.
Sciaphila niveosana, Pack. }
=*Ablabia pratana,* Hüb., Christoph. Stet. ent. Zeit. xix. p. 313; Mösch. Wien. ent. Monatsch. iv. p. 380; Pack. Proc. Bost. Soc. Nat. Hist. xi. p. 60.
**Cochylis kindermanniana,* Tr. (858), Mendocino, California, May 30, 1871.
**Cochylis smeathmanniana,* Fab. (866), North California, beginning of June 1872; Maine (teste Fernald, MS.).
Cochylis deutschiana, Zell. (857) } Mösch. Stet. ent. Zeit. 1870, p. 373; Wien. ent. Monatsch. viii.
Cochylis chalcana, Pack. } p. 199, iv. p. 380; Pack. Proc. Bost. Nat. Hist. xi. p. 57.
**Cochylis dubitana,* Hüb. (906).
=*Simaethis albidana,* Walk. Cat. Lep. Het. xxxv. p. 1807.
**Cochylis nana,* Haw. (880), Rouge River, Oregon, end of May 1872.
=*Penthina ochreoalbana,* Walk. [See p. 32.]
**Retinia duplana,* Hüb. (915), Camp Watson, Oregon, April 1872.
**Retinia sylvestrana,* Curt. (916), Western Oregon, end of April 1872.
**Retinia pinivorana,* Zell. (918), Western Oregon, end of April 1872.
Penthina mœstana, Wocke (931), Möschler, Wien. ent. Monatsch. iv. p. 199; Pack. Proc. Bost. Soc. Nat. Hist. xi. p. 60.
Penthina turfosana, H.-S. (955), Mösch. Wien. ent. Monatsch. iv. p. 199; Pack. Proc. Bost. Soc. Nat. Hist. xi. p. 60.
**Penthina roseomaculana,* H.-S. (946) (teste Fernald, MS.).
Penthina pruniana, Hüb. (938) (teste Walk. Cat. Lep. Het. xxviii. p. 374).
Sericoris bentleyana, Don. (976), Curt. Appendix Ross's 2nd Arctic Voy. p. 77.
**Sericoris urticana,* Hüb. (983), Shasta County, California, July 1871.
*?*Sericoris rivulana,* Scop. (981), end of May, Mendocino, California, 1871, and Rouge River, Oregon, 1872.
Aphelia lanceolana, Hüb. (1006).
var. *verutana,* Zell. Verh. z.-b. Ges. Wien, xxv. p. 247.
Aphelia furfurana, Haw. (1011), Zell. Verh. z.-b. Ges. Wien, xxv. p. 247, also Shasta County, California, July 12, 1871, and South Oregon, June 1872.
Eudemis botrana, Schiff. (1013) } Zell. Stet. ent. Zeit. xxxii. p. 178.
=*Endopisa viteana,* Clem. }
=*Penthina vitivorana,* Pack., Zell. Stet. ent. Zeit. 1871, p. 117.
*?*Pædisca trigeminana,* Stph. (1101), Rouge River, Oregon, May 1872; Webber Lake, California (teste Zeller, MS.). [See p. 51.]
Pædisca bimaculana, Don. (1085), Zell. Verh. z.-b. Ges. Wien, xxv. p. 302.
**Semasia aspidiscana,* Hüb. (1123), April 1872, Fort Dalles, Oregon.
**Grapholitha succedana,* S. V. (1139), Mendocino County, California, and Rouge River, Oregon, May 1871 and 1872.

Carpocapsa pomonella, Lin. (1181), Harris's N. Eng. Farm. vol. xxii. no. 11, p. 13 (1843); ibid. n. s. vol. ii. no. xvi. p. 252 (1850); Editors, Am. Ent. i. pp. 112, 114; Riley's 1st Rep. Ins. Miss. 1869, p. 62; 1871, p. 101; 1872 and 1873; Bethune, Can. Ent. i. p. 89; Saunders, Can. Ent. iii. p. 26.

Tmetocera ocellana, Fab. (1210)
= *Grapholitha oculana*, Saunders } Zell. Verh. z.-b. Ges. Wien, xxv. 267.

**Steganoptycha dealbana*, Fröl. (1212), Colusa County, California, June 26, 1871.

**Steganoptycha augustana*, Hüb. (1845), North California, June 1872.
= *Sciaphila direptana*, Walk.
= *Sciaphila vilisana*, Walk. } [See p. 23.]

Phoxopteryx comptana, Fröl. (1261)
= *Anchylopera fragariæ*, Walsh & Riley } Zell. Stet. ent. Zeit. xxxii. p. 173.
= *Grapholita conflexana*, Walk. [See p. 68.]

**Phoxopteryx biarcuana*, Stph. (1256), Shasta County, California, July 12, 1871.

**Rhopobota nævana*, Hüb. (1268), Shasta County, California, July 28, 1871.
= *Sciaphila luctiferana*, Walk.
?= *Anchylopera vacciniana*, Pack. } [See p. 23.]

**Dichrorampha alpinana*, Tr. (1274), Rouge River, Oregon, May 1872.

*?*Dichrorampha plumbana*, Scop. (1299), Siskiyou Mountains, California, June 1872.

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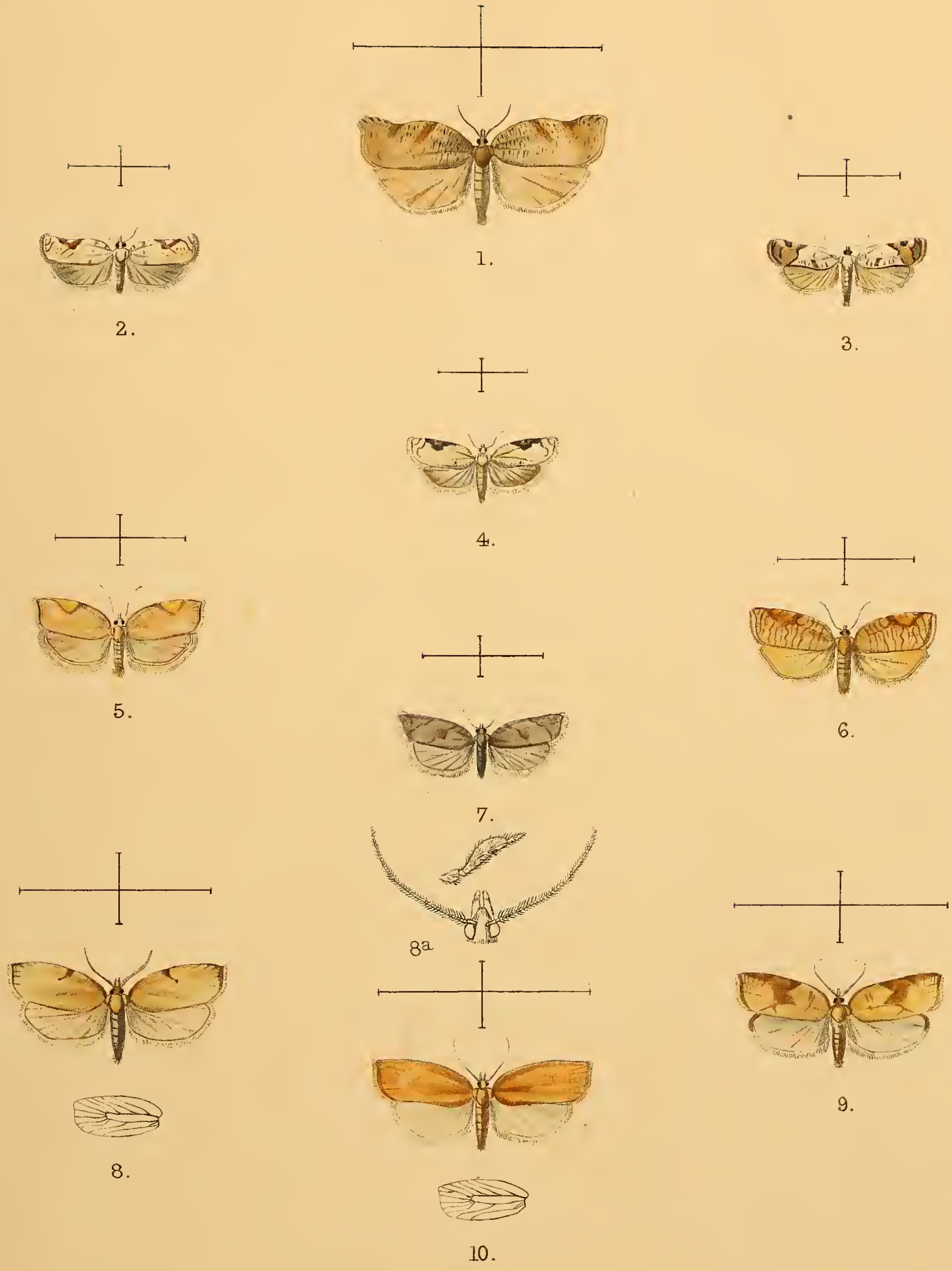
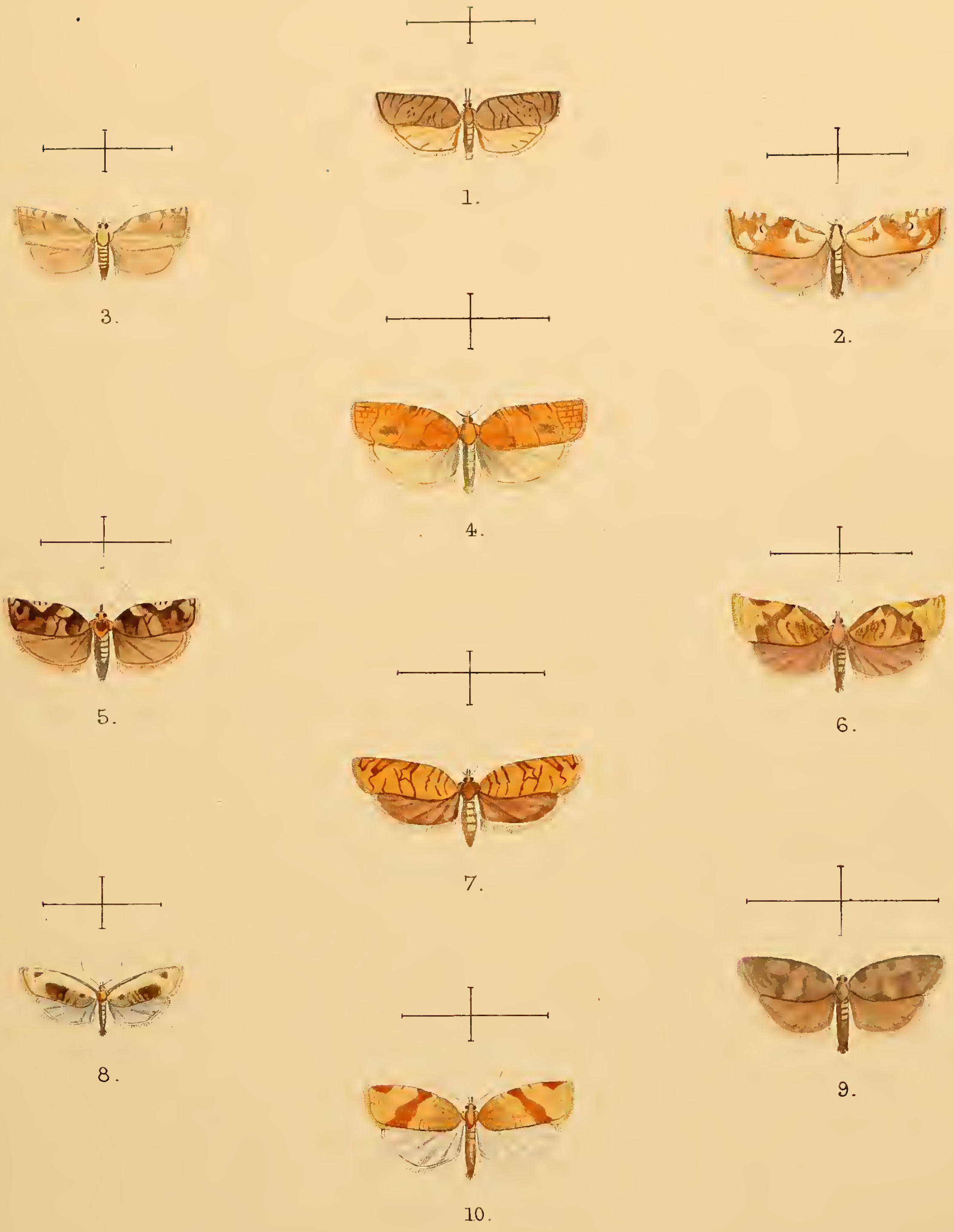


Edwin Wilson, del. et lith. Mintern Bros. imp.

1. Cacoecia patulana. ♀
2. Teras subnivana.
3. Teras nivisellana.
4. Teras simpliciana.
5. Teras foliana.
6. Teras foliana. (var.)
7. Teras pulverosana.
8. Hendecastema cuneanum. ♂
9. ———— adumbranum. ♂ (var.)
10. Hendecastema cuneanum. ♀



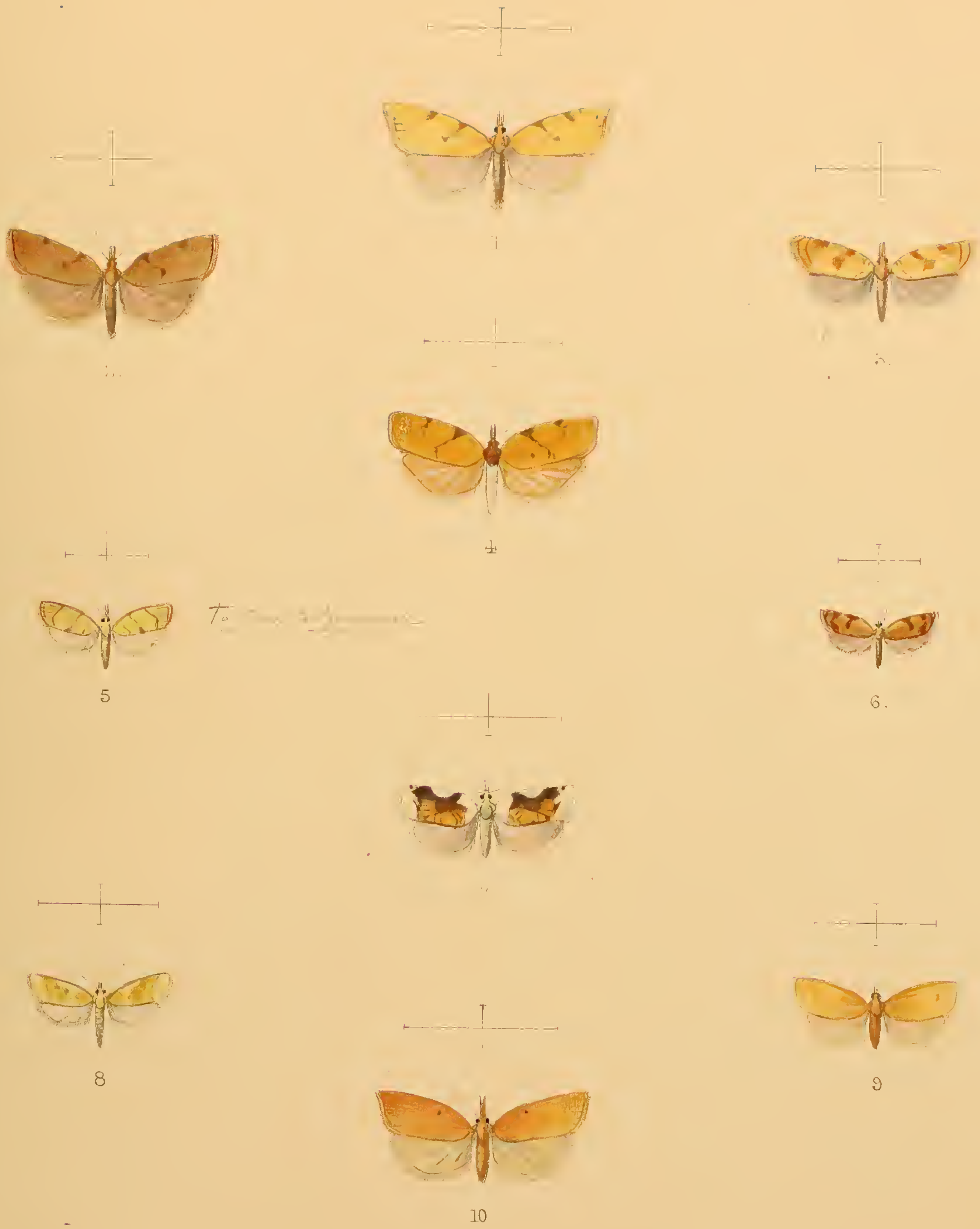
Edwin Wilson, del. et lith.

Mintern Bros. imp.

1. Platynota rostrana.
2. Cacœcia semiferana.
3. Cacœcia semiferana. (var.)
4. Cacœcia transiturana.
5. Cacœcia argyrospila.
6. Cacœcia argyrospila. (var.)
7. Cacœcia georgiana.
8. Ptycholoma melaleucanum.
9. Heterognomon conflictanus.
10. Pandemis albaniana.

Edwin Wilson, del. et lith. Mintern Bros. imp.

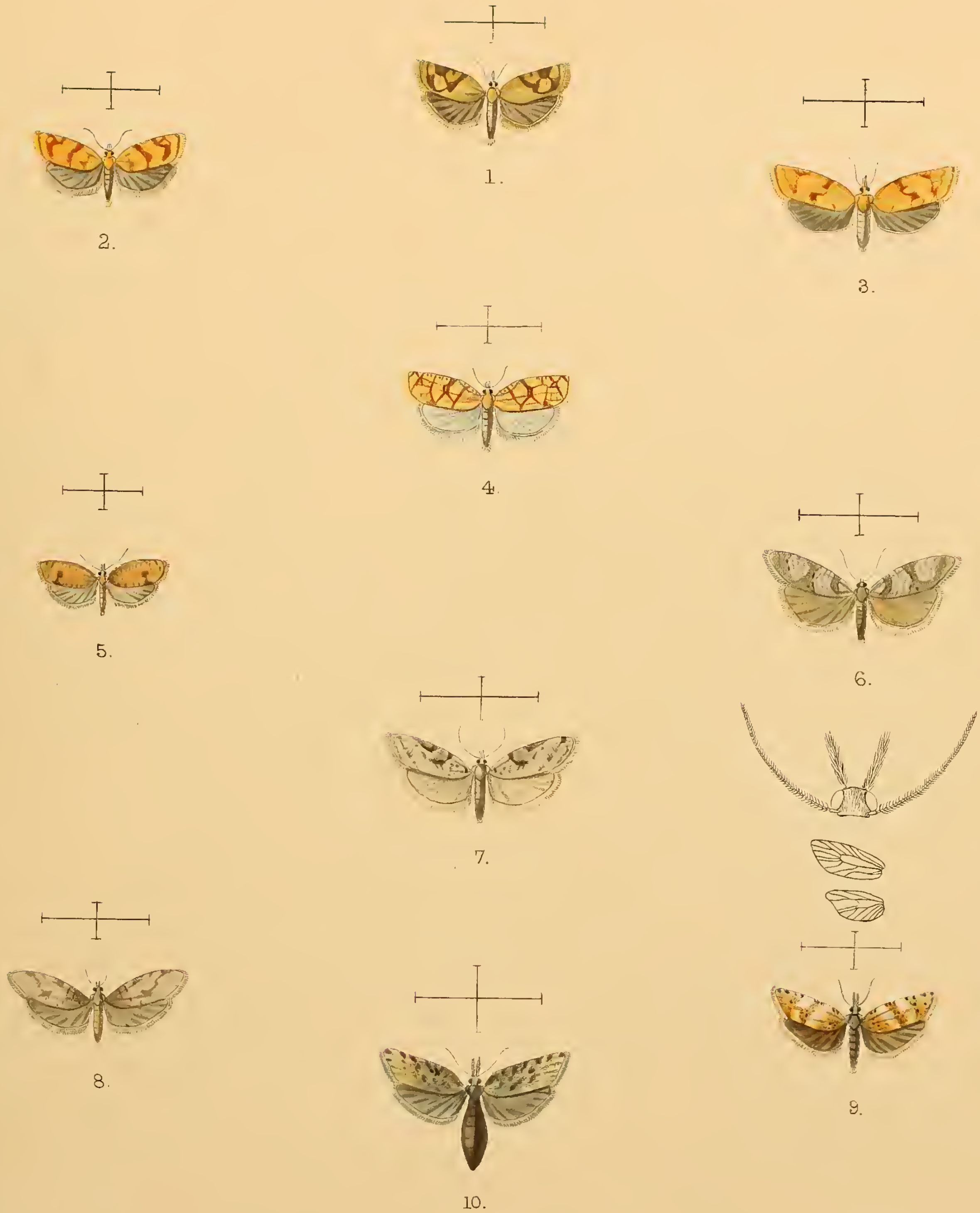
1. Lozotænia obsoletana.
2. Lozotænia fucana.
3. Lozotænia retiniana.
4. Lozotænia retana = houstonana
5. Lozotænia franciscana.
6. Lozotænia glaucana.
7. Lophoderus gloverana.
8. Lophoderus afflictana.
9. Lophoderus triferana.
10. Œnectra inconditana.



Edwin Wilson, del. et lith.

Mintern Bros. imp.

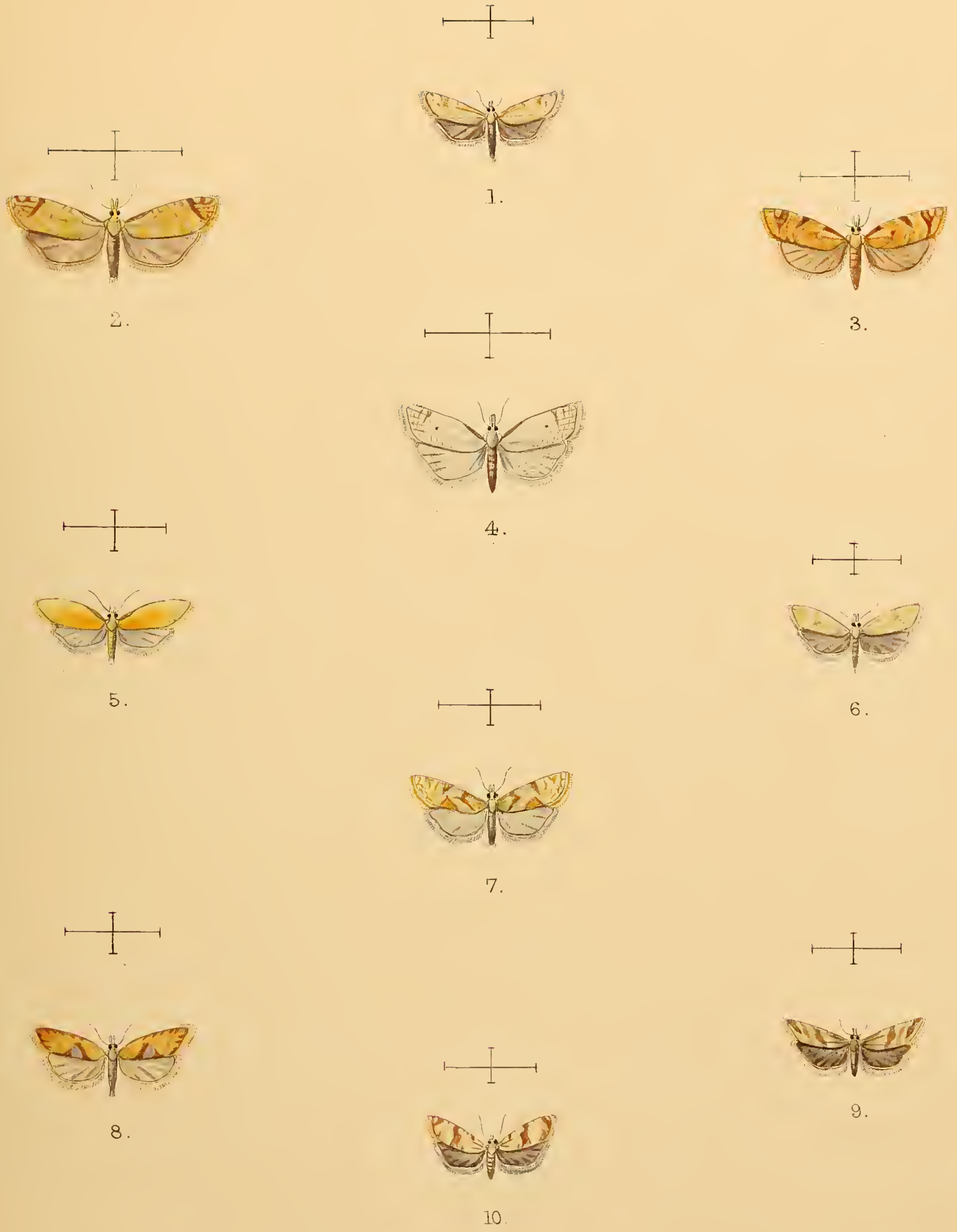
1. Œnectra rudana.
2. Œnectra rudana. var.
3. Œnectra senecionana.
4. Cenopis directana.
5. Cenopis gracilana.
6. Cenopis diluticostana.
7. Cenopis niveana.
8. Cenopis pulcherrimana.
9. Cenopis demissana.
10. Cenopis xanthoides.



Edwin Wilson, del. et lith.

Mintern Bros. imp.

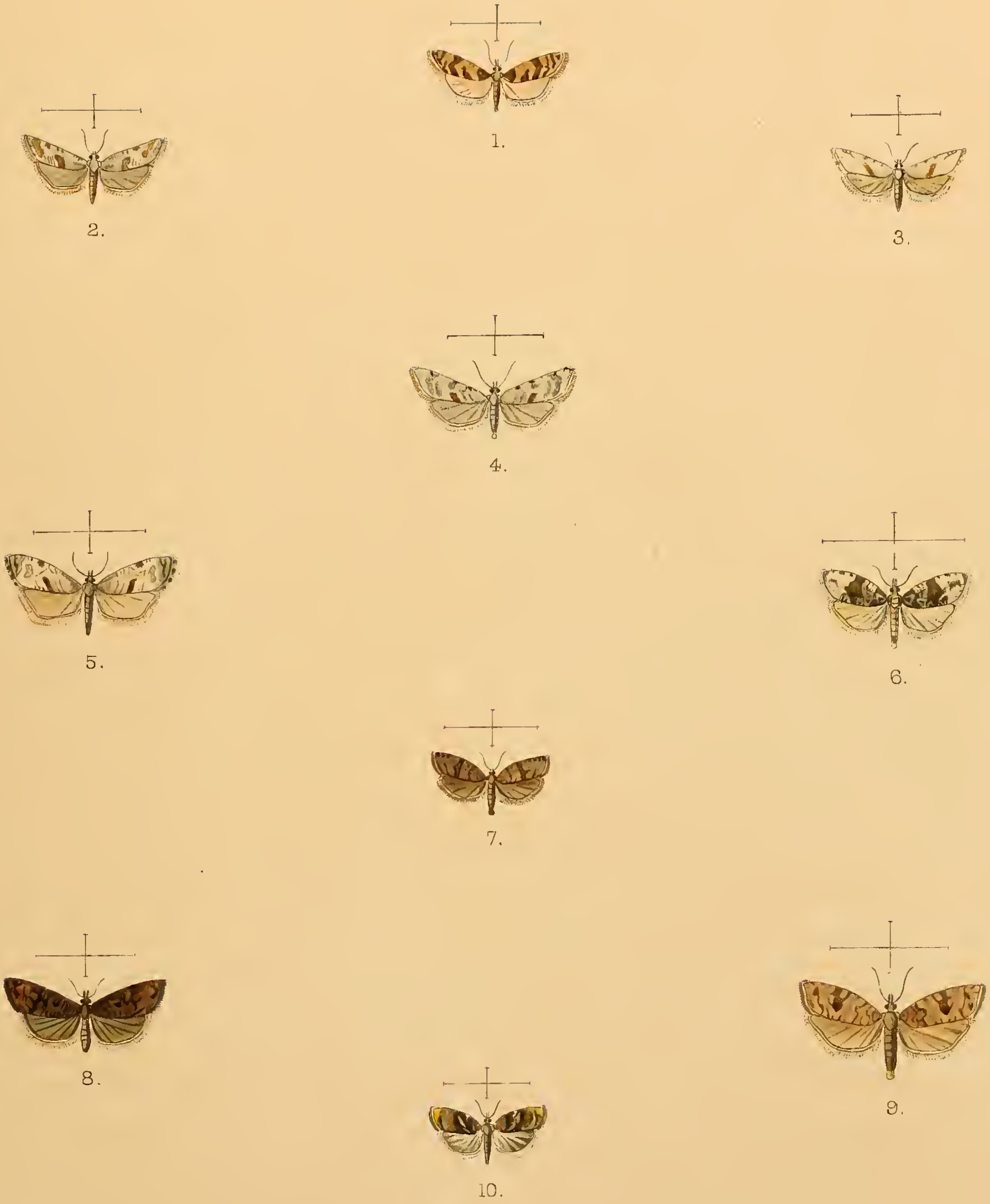
1. Dichelia tunicana.
2. Dichelia californiana. ♂
3. Dichelia californiana. ♀ var.
4. Capua furcatana.
5. Capua lentiginosana.
6. Sciaphila horariana.
7. Sciaphila trigonana.
8. Sciaphila basiplagana.
9. Synnoma lynosyrana. ♂
10. Synnoma lynosyrana. ♀



Edwin Wilson, del. et lith.

Mintern Bros, imp.

1. Retinia subcervinana.
2. Idiographis fulviplicana. ♂
3. Idiographis fulviplicana. ♀
4. Idiographis ægrana.
5. Idiographis floccosana.
6. Cochylis intactana.
10. Cochylis transversana.
7. Cochylis fernaldana.
8. Cochylis scissana.
9. Cochylis parallelana.

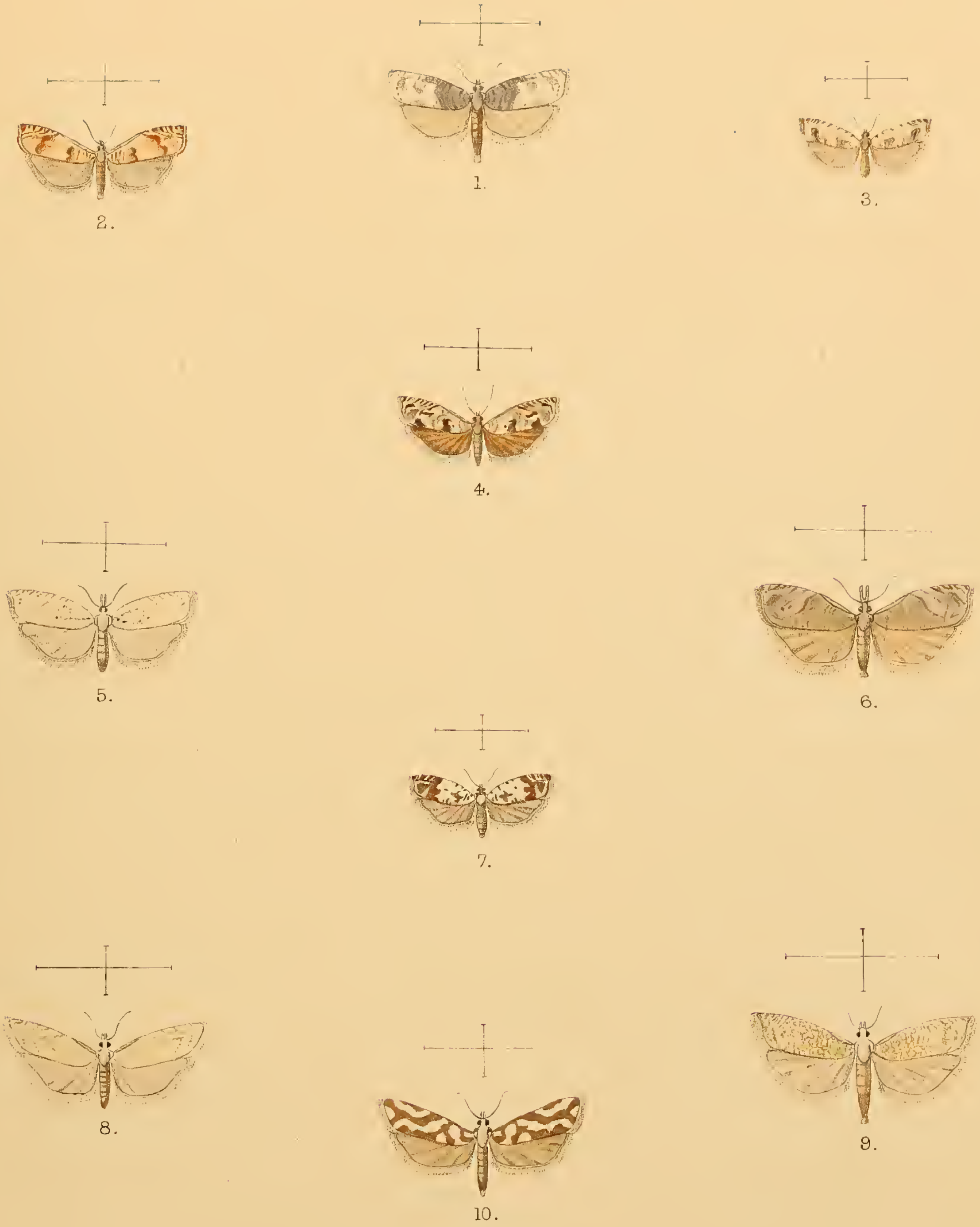


Edwin Wilson del. Mintern Bros imp.

1. Cochylis saxicolana.
2. Cochylis latipunctana.
3. Cochylis dilutana.
4. Cochylis campicolana.
5. Cochylis parvimaculana.
6. Penthina consanguinana.
7. Penthina conditana.
8. Penthina hebesana.
9. Sericoris vetulana.
10. Sericoris auricapitana.

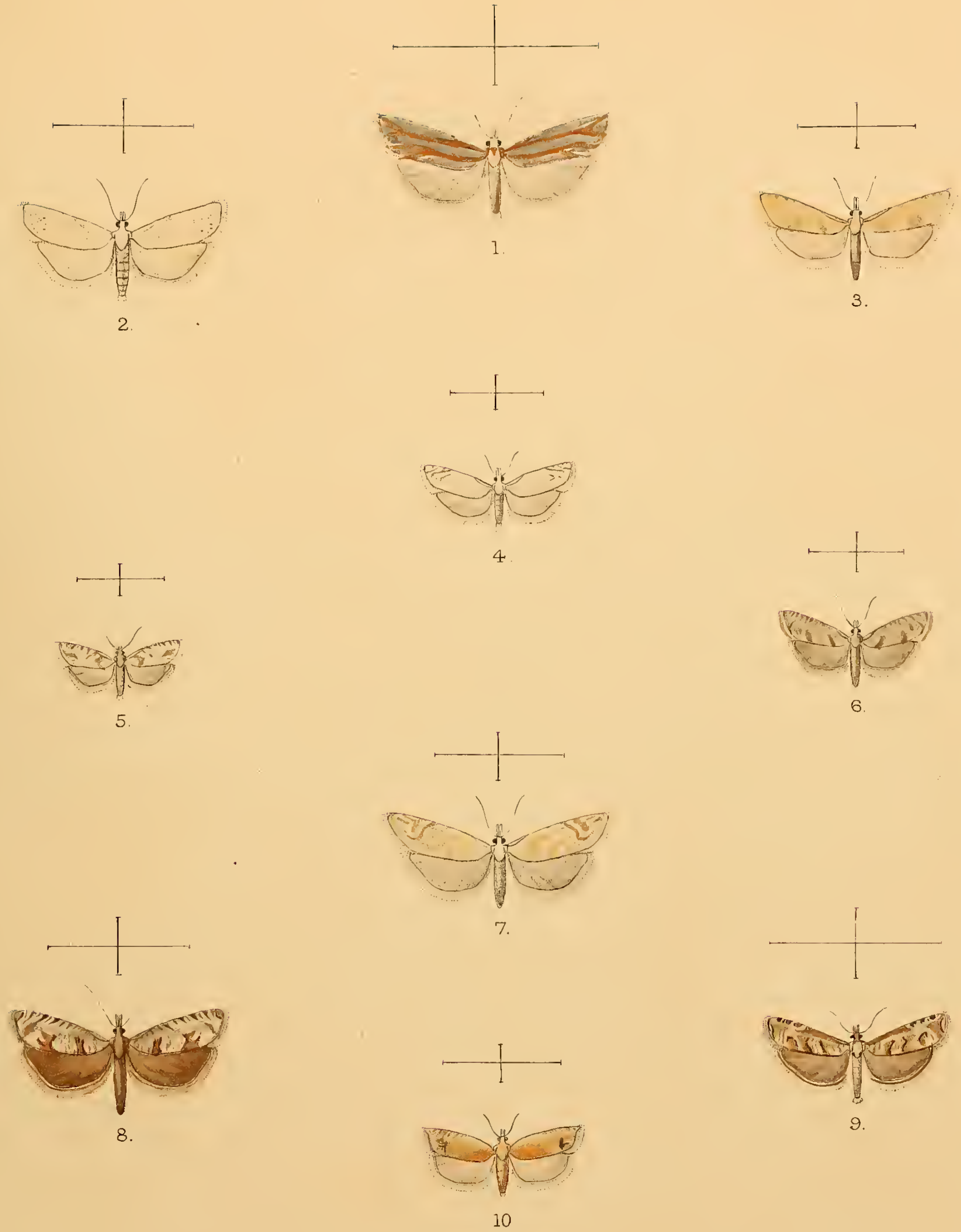
Edwin Wilson del. Mintern Bros imp.

1. Sericoris puncticostana.
2. Sericoris dilutifuscana.
3. Sericoris dealbana.
4. Sericoris chalybeana.
5. Sericoris inquietana.
6. Phœcasiophora confixana.
7. Exartema sericoranum ♂
8. Exartema punctanum. ♀
9. Exartema griseoalbanum. ♀
10. Pædisca culminana.



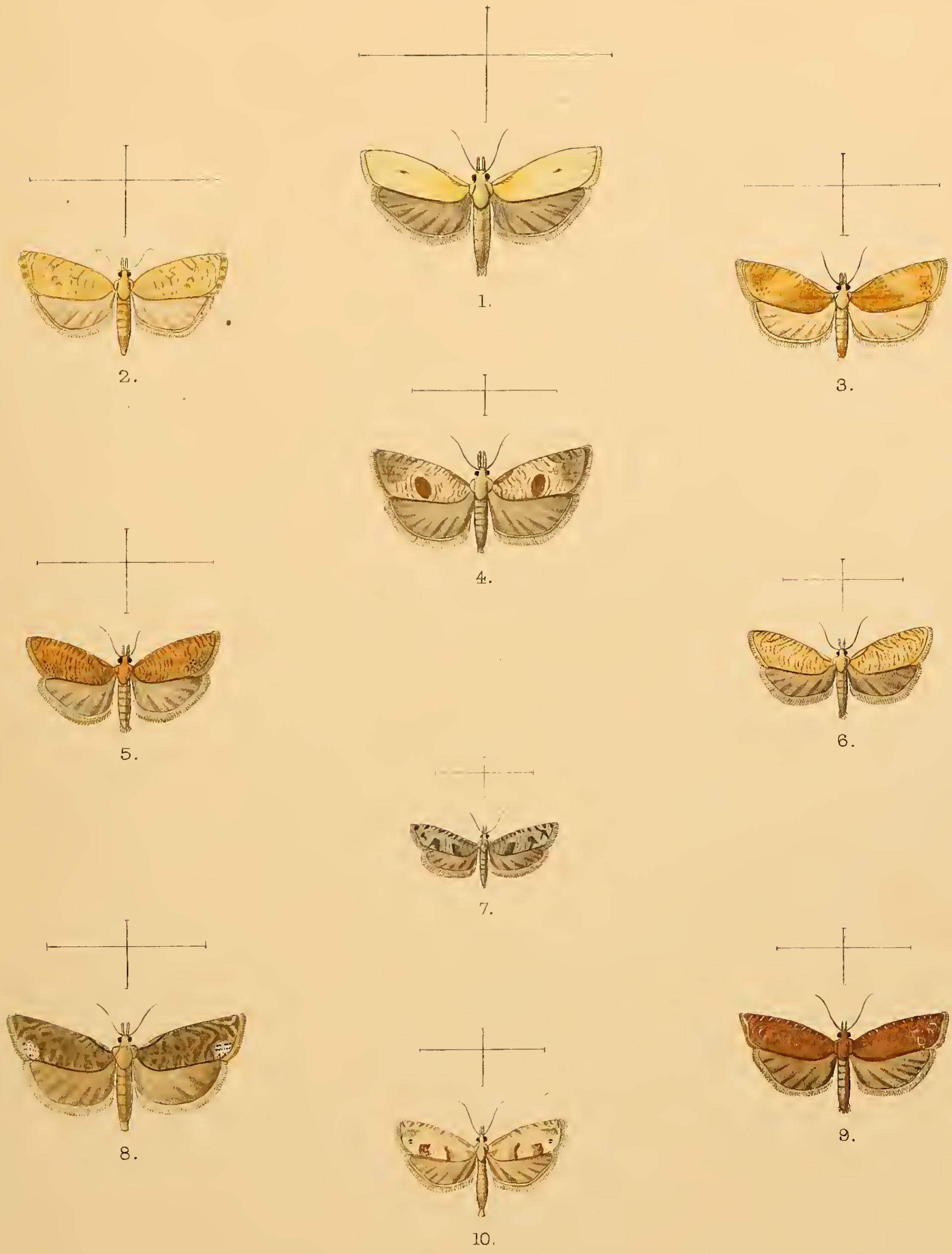
Edwin Wilson, del et lith. Mintern Bros imp.

1. Pædisca illotana.
2. Pædisca terracoctana.
3. Pædisca rectiplicana.
4. Pædisca albangulana.
5. Pædisca basipunctana.
6. Pædisca subplicana.
7. Pædisca nigralbana.
8. Pædisca agricolana.
9. Pædisca atomosana.
10. Pædisca bolanderana.



Edwin Wilson del et lith. Mintern Bros. imp.

1. Pædisca crambitana. 4. Pædisca argentialbana. 7. Pædisca primulana.
2. Pædisca larana. 5. Pædisca resumptana. 8. Pædisca biquadrana.
3. Pædisca luridana. 6. Pædisca pulveratana. 9. Pædisca shastana.
10. Pædisca cataclystiana.



Edwin Wilson, del et lith. Mintern Bros, imp.

1. Pædisca bipunctella.
2. Pædisca grandiflavana.
3. Pædisca subflavana.
4. Pædisca maculatana.
5. Pædisca irroratana.
6. Pædisca perdricana.
7. Pædisca passerana.
8. Pædisca glomerana.
9. Pædisca fulminana.
10. Pædisca canana.

Edwin Wilson del et lith.

Mintern Bros, imp.

1. Pædisca hirsutana.
2. Pædisca improbana.
3. Pædisca transmissana.
4. Pædisca strenuana.
5. Pædisca radicana.
6. Pædisca abruptana.
7. Pædisca graduatana.
8. Pædisca palpana.
9. Pædisca abbreviatana.
10. Pædisca solicitana.

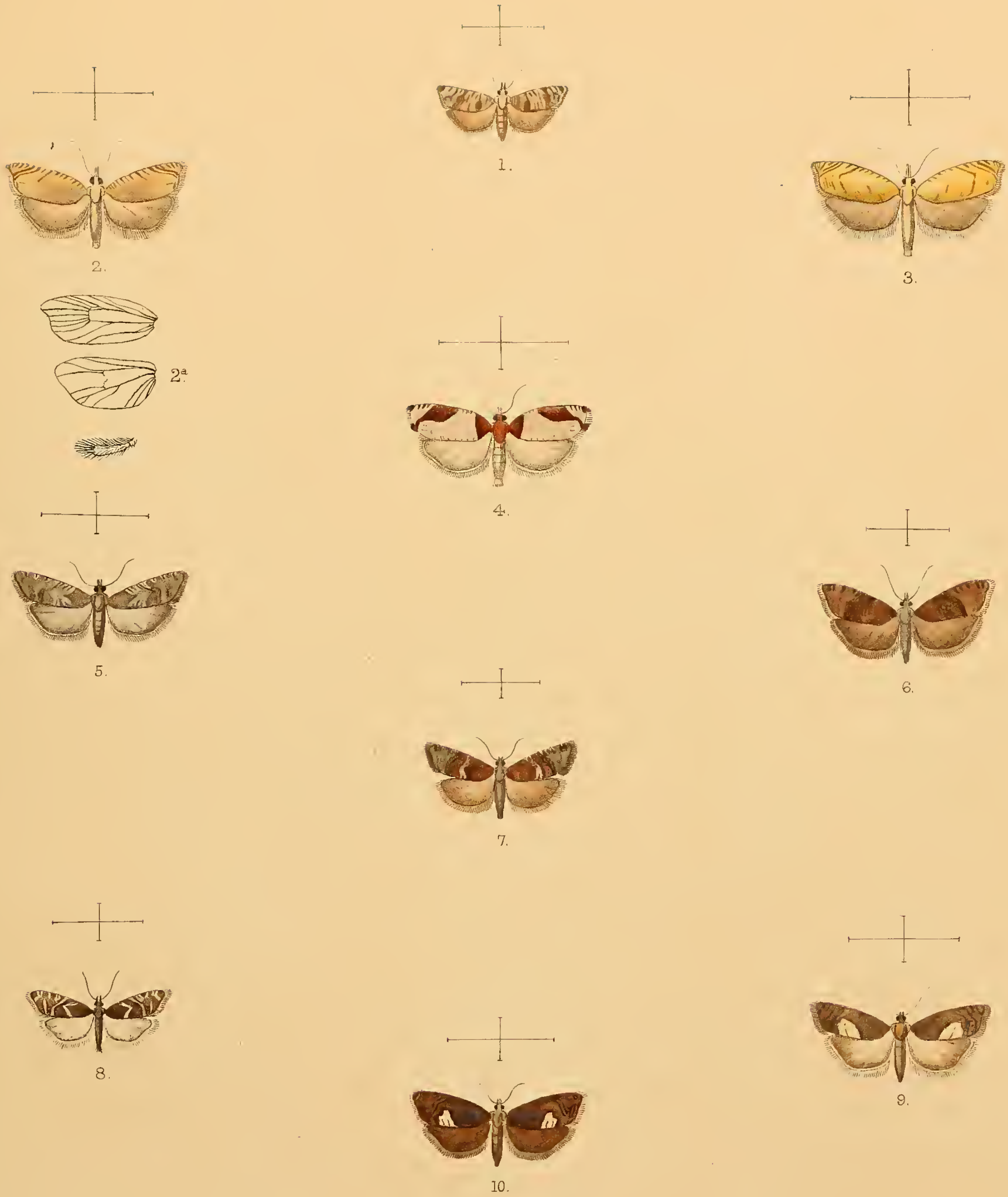
Edwin Wilson, del et lith. Mintern Bros. imp.

1. Semasia radiatana.
2. Semasia elongana.
3. Semasia artemisiana.
4. Semasia scalana.
5. Semasia columbiana.
6. Semasia decempunctana.
7. Semasia perangustana.
8. Semasia lapidana.
9. Semasia sublapidana.
10. Semasia tenuiana.

Edwin Wilson, del et lith.

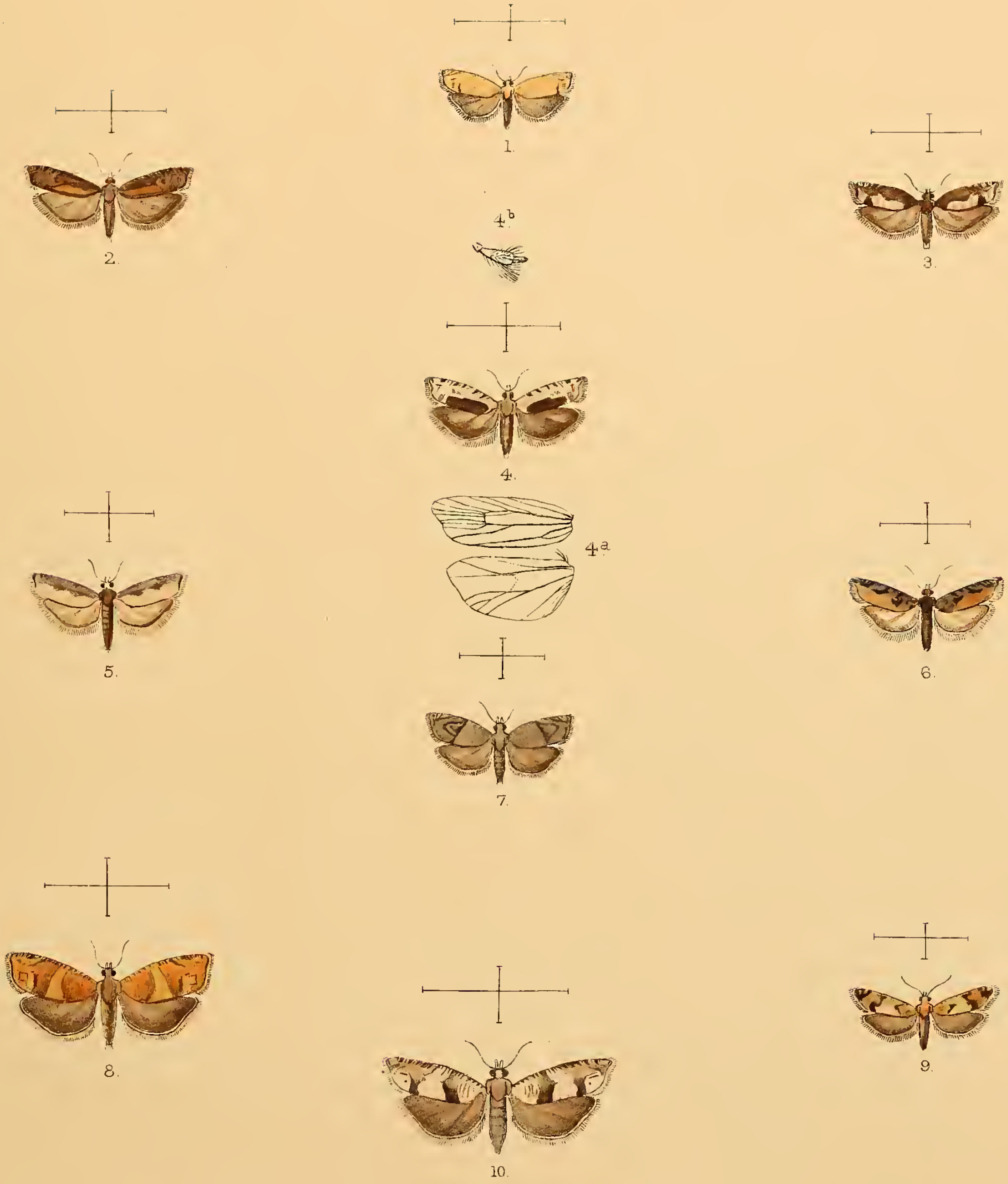
Mintern Bros imp.

1. Semasia parvana.
2. Semasia stramineana.
3. Semasia minimana.
4. Semasia argenticostana.
5. Semasia griseocapitana.
6. Semasia pallidicostana.
7. Semasia infuscana.
8. Semasia oregonana.
9. Semasia amphorana.
10. Semasia refusana.



Edwin Wilson del et lith. Mintern Bros. imp.

1. Semasia perstructana.
2. Hystrichophora leonana.
3. do. do. var. aurantiana.
4. Exartema ferriferanum.
5. Grapholitha vitrana.
6. Grapholitha cæruleana.
7. Grapholitha conversana.
8. Grapholitha lunatana.
9. 10. Grapholitha americana.



Edwin Wilson del. et lith.

Mintern Bros. imp.

1. Grapholitha trossulana.
2.-6. Proteopteryx emarginana. *varr.*
7. Pthoroblastis texanana.
8. Carpocapsa latiferreana.
9. Steganoptycha liturana.
10. Steganoptycha lagopana.

Edwin Wilson del. et lith.

Mintern Bros. imp.

1. Steganoptycha biangulana.
2. Steganoptycha purpuriciliana.
3. Phoxopteryx discigerana.
4. Phoxopteryx pacificana.
5. Phoxopteryx apicana.
6. Phoxopteryx muricana.
7. Phoxopteryx divisana.
8. Phoxopteryx cometana.
9. Rhyacionia juncticiliana.
10. Dichrorampha radicicolana.